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FLOWERS

AND

THE FLOWER GARDEN

WITH INSTRUCTIONS ON THE CULTURE OF

Ornamental Trees, Shrubs, etc., etc.

By ELIZABETH WATTS,

Author of "Vegetables and How to Grow Them."



LONDON AND NEW YORK:
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PREFACE AND DEDICATION.

WHEN I began to write this little book, and to reckon what its readers would most require in it, I looked back to the time, some years ago now, when we first owned a garden, rather large in size for Middlesex, and, like hundreds similarly placed, sorely stood in need of the exact, though concise information it contains; and I have tried to arrange it so that it will meet the wants of this numerous class. If they find it lessen the difficulties that stood in our way in cultivating our flowers when we first had a garden, I shall be satisfied.

As the little work is intended for the many rather than for the scientific few, I have as much as possible avoided botanical names and technicalities, only introducing them when general identification seemed to render it necessary.

To all who own a flower garden and delight in flowers I dedicate FLOWERS AND THE FLOWER GARDEN, and hope they will find it useful.

E. W.

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AND

THE FLOWER GARDEN.

CHAPTER I.

PLEASURE GARDENS.

THE Pleasure Garden, in all its various forms, can scarcely fail to be the delight, the occupation, the pride, the glory of the English gentlewoman. It is work for the idle and recreation for the busy. Whatever our station renders desirable in either shape we may get among flowers, trees, and shrubs; and there all the good qualities so paramount in the women of England find scope. A well cared for garden displays—and displays to good advantage too—the love of home, domestic taste, a wish to please, industry, neatness, taste, and all the sweet household virtues that create home wherever good women rule, and that make Englishmen, when blessed with such as wives or relatives, so fond of it and of them. Nor is it ladies only that find, in gardening, employment for mind and hands, giving ample return in gratification, health, and pleasure; for the master too, if he be a man of taste and feeling, likes it no less: only, gardening and the love of a garden are not solitary pleasures; and I do not think any owner—or gardener either, for the matter of that—ever really delights in it unless those whose smiles are as pleasant to him as the fragrance of the flowers, do so

too. To the little ones of the family also, the value of the garden may have no limit: give a little boy or a little girl a bit of ground to call his own or her own, and encourage the young owner to cultivate it well, and it may be the nursery of all the good qualities that I have named, and many more.

One great merit in horticulture is, that it confines itself to no rank, and that it may form the amusement or the pursuit alike of great and small, rich and poor; only, the kind of garden we choose, what we do with the land which we have at command, must depend on those extraneous circumstances to which we all have to submit.

The Landscape Garden is perhaps the most pretentious, since it demands not only an extensive, but a varied, site. Those, however, who happen to have a rough piece of ground to bring into cultivation, can devote their knowledge and prescience to create from it a pleasure ground of varied and great beauty, by contriving the planting to humour the accidents of the ground, and by altering the ground to assist the plantations, thickets, shrubberies, and vegetation of different kinds. Trees and shrubs planted in large or small groups, or singly; tasteful openings to show distant peeps of scenery, wherever such happen to be at command; promontories reached by rough rustic stairs, now seen, now hidden; faces of cliffs, in some parts densely draped with foliage, in others shaped into little flats, planted with groups of plants of bold foliage, hollowed out into caverns and grottoes, adorned with picturesque erections, or left in naked ruggedness, helped by the hand of man to an angle taking the finest sunset tints,—will lead on such a bit of ground to a very beautiful landscape garden. The top of the height may be shaped into terrace walks, approached from below at intervals by gradual ascents and rustic stairs; and half way up and near the bottom, summer-houses, aviaries, grottoes, little caves, arbours, and seats of various form, may at once please the eye and utilize the position by offering pleasant places for rest, and cool or warm refreshment to suit all seasons. Little hills can

be tinted and varied by winding devious gravel paths, and diverse vegetation ; and flat parts may have ponds for water fowl, surrounded by rising ground planted as shrubberies. Sheets of water, the largest at command, must on no account be absent from the landscape garden. In fact, there is no end to the beauties which the gardener may press into his service in working a rough bit of ground, including high ground and low, into cultivation.

In such ground ultra-precise gardening would be out of place. The paths should be kept neat, but they do not need a border : the undergrowth of trees and shrubs at their edge will in many places make the best-looking border they can have ; and where they leave patches that would look bare, grass may be encouraged to grow, and wild and other hardy flower roots which the locality will suit may be planted. Lilies of the valley, wood anemones, primroses, periwinkle, and all shade-loving, free-flowering roots may be used for this purpose. The trees and shrubs for clumps and shrubberies must be chosen according to the space at command. If the shrubbery or space to be planted be not large, variety should be studied : plant only one tree and shrub of a kind. If, on the contrary, the ground to be planted be extensive, with varieties in the formation of the ground, group the trees, &c., in masses of several of a sort in one group, and let no one group be like another. In planting the ground think of the future : plant as sparsely as you may, the trees and shrubs will require thinning out *within* five years, but they should be so planted as not to get overcrowded much sooner than that. I remember a shrubbery walk the outline of which always seemed to me very pretty and picturesque, and would have done if the dear name of home had not appertained to its locality. The walk turned off at an angle from the entrance gate, and took a zigzag course, hidden in its own shrubbery, round a wide deep lawn, and led to a side entrance some distance from the house. At the corner, by the gate, a fine horse-chestnut towered over every other tree (except the poplar and the larch) ; on a bank, covered with periwinkle and St. John's wort, on the side of the path

opposite to it (so as to look before it from the windows of the house), stood a fine round evergreen oak. Then came thick bushy lilacs on the farther side of the path, and under them, divided from them by the path, low laurels; then one Lombardy poplar tapered up into the sky, and farther on, flanked on each side by bushy laurels, was a remarkably fine weeping ash; a wide division in the laurels before it laid it open in view of the windows, and some little way beyond it again a larch rose tall and graceful. Lilacs, syringas, snowberries, a birch, laburnums, lilacs, and another dense cluster of snowberries, on the one side, and double furze, pink acacia, and more laburnums, on the other, led on to the corner. After these the path turned the corner and went on its course between tall trees on the one hand, and low bushes on the other, until it diverged to the side gate amid *Corchorus* and ivy on the one hand, and the flower garden on the other. The outline of the shrubbery was varied and pretty, and in that it deserves to be taken as a model. A landscape garden, to be fully carried out, needs an extensive piece of ground; but its principles may be brought to bear on a rough bit, whatever be the size.

Gardens in the Italian style also need sufficient space, for if anything of this kind be attempted in a medium-sized back garden there will be great danger of its degenerating into a tea-garden-like assemblage of fountains, parapets, and pedestals, or at any rate of incurring the odium often bestowed on Cockney gardens. A varied surface favours this kind, as it should have facilities for being constructed with terraces, and raised positions for temples, fountains, and such like ornaments. One of its characteristics is stone, or stucco, as the case may be. Terraces with parapets, flights of steps, balustrades, urns, and vases; fountains of every shape and make; temples and erections of all and every kind, viaducts, tunnels, and all appliances of the kind that man ever invented to put into a garden, appertain to it. An Italian garden agrees well with a house of formal architecture, whence it may be reached by steps descending from a terrace stretching along the front. The flower beds in such

gardens are formal in character, edged with stone (or an imitation of it), and each filled with flowers of one or two kinds. Care and taste in filling the vases are necessary, as, if the flowers in them are shabby, it will quite spoil the effect. Plants of a drooping growth, hanging carelessly over the edge of the vases, or light graceful creepers led up the pillars, will assist the general pretty appearance and prevent disagreeable formality. Numerous groups of ornamental trees and shrubs should be so placed as to aid the general effect.

The Geometric Garden, in which the beds appear to have been marked out with rule and compass, to suit which shrubs and evergreens should be kept clipped into form, has given place to the more fanciful symmetrical parterre, in which the beds twist about each other, and fit into each other in set pattern only a degree less formal than squares, parallelograms, and triangles. The ancient art of cutting trees and shrubs into curious forms, called Topiary, was done by placing a shape of wirework over the tree to be trimmed, and clipping to it.

The symmetrical parterre is in small beds, generally of fantastic form, cut out in a lawn or separated by paths. It has of late years become such a favourite that it is now the kind of flower garden most in use of any kind. The beds are of set form, side agreeing with side, and end with end; and the colouring is massed by planting each little bed with one flower, or with two or three only, set into large patches, or with a centre of one colour and a border of another. In planting this garden the whole of the bed is to be covered, so as to present to the eye one mass of colour of the shape it bears. Vases placed in set form, and fountains, are in character. In making a plan for a garden of this kind it is well to avoid long sharp angles, and very narrow bits, from the difficulty of keeping the plants within bounds, and also of maintaining the form in clipping the edges. A method that has sometimes been resorted to in diminishing pictures will be found of great help in shaping beds. Draw the plan on paper, taking care that its four quarters, or two sides, as the case may be, agree exactly, which may be

done by a tyro, by folding the paper and pricking through; then divide the paper into squares, and mark out the ground into the same number of squares; and simple measuring will do the rest. If the beds be separated by paths, not cut out on grass, they must be edged with well-kept box. If a garden of this kind be surrounded by a border, that may be planted with tall growing vegetation—such as ornamental trees, shrubs, standard roses, and plants of a like height, but for the beds themselves low-growing things will have the best effect. The highest should not exceed the height of a rosebush; and it is a general practice to peg down most of the plants, so as to maintain quite a low surface. The corresponding beds of the two sides, and even of the four quarters, should agree exactly, and the flowers chosen should be of kinds which bloom abundantly. There is no kind of garden which requires more exact care, as extreme neatness should especially characterize it. It looks very poor if some of the beds are behind others in flowering, and others only partially full of plants and flowers, or if the edges are not exactly kept. In the spring a symmetrical garden planted with bulbs is very bright and gay; but in this case either the bulbs must be sacrificed when they have done flowering, or the use of the garden given up for a portion of the year afterwards. This, however, may be obviated by planting the bulbs in pots, and sinking them.

The old-fashioned English flower garden will always have many friends. The landscape garden is for the rich, or, at any rate, for the owner of an extensive piece of ground. The Italian garden appertains appropriately to mansions, and requires expensive mason's work, hydraulic apparatus, and plenty of gardeners to keep it in the trim order without which it conveys more idea of shabbiness than the humblest garden of smaller pretensions. The geometric garden must come down to us from ages back, or it is nothing. Its clipped trees, yew hedges, formal paths, and stately growth are the creation of centuries. The symmetrical flower garden needs a greenhouse or a long purse to supply plants in sufficient numbers for its

requirements, and a gardener to keep it in the exact order without which it will never show to good advantage. But the simple flower garden, with its protecting screen of trees (where there is space for them), its lively pretty flowering shrubs, its rich clusters of perennials, its standard roses and rosebushes of all varieties, its flowers of graduated heights, descending to low bright varied pinks, pansies, carnations, cloves, and all that is bright and sweet, and, above all, its constant succession of flowers, mixing them up, as Nature does, with plenty of green, is much less *exigeant*. Life is not made up of great patches of brightness; and it does not seem that gay flowers were ever intended to be planted so, but were meant to come like our brightest moments, detached and resting in repose—green foliage. Whoever owns a little bit of ground, industry to work in it, and the wish to make it pretty, may have a flower garden. Even Dirk Hatterick could reckon on spending his ill-gotten gains on a “Blumengarten”; and there are certainly none so rough that they cannot be softened with the beauties of Nature, none so dull that they cannot be cheered by them. The plain flower garden, with its border round, its beds of just any convenient shape, its lawn, if there be room for one, and the ease with which its work can be done, is especially suitable to those who cultivate their own flower gardens. In the arrangement of these gardens the highest things should stand at the back of the borders, and in the centres of the beds. The plants in front or around should be in bold clumps, and should stand well apart, and the earth between should be well weeded and neatly raked. In planting it is necessary to calculate time and space. Consider the time of flowering of all that is put in the garden, so that all seasons as they come round may have flowers in bloom, well spaced about the garden, with tolerable regularity. Consider the space which the plants planted and the seeds sown will take when they grow up. In planting and sowing look forward not less than two months, and plant and sow in such a manner that the borders shall not be overcrowded at the end of that

time. The plain flower garden is the especial theatre for choice roses ; for the recesses among trees and shrubs, sheltered sunny nooks, and warm borders of various aspect, offer good places for all degrees of hardihood, height, and size. Fine herbaceous plants, too, of which we have such endless variety, have every facility in gardens where plants of all heights are wanted and can be well placed.

The sort of garden on which we decide, among those I have named, and many other kinds, must depend on the size of the ground at command, the climate in which it stands, its aspect, surface, and soil ; also on the money and labour which we wish to bestow on our horticultural pursuits. Most persons who take to gardening, however, have no power of choice in the matter, but follow after others, take in hand the garden which happens to come to hand, and make the best of it. Those who make the best of it, whether in the affairs of life or the affairs of the garden, are pretty sure to do well and prosper. If we take a garden already in cultivation, much uncertainty in decision will be spared us. Let us in this instance go to work with caution, and take care how we destroy ; for old gardens may have many trees and roots well worth saving which do not look so at first sight.

CHAPTER II.

THE LAYING OUT OF THE GARDEN.

THE kind of fencing is a matter of less importance in the flower than in the kitchen garden, provided it offer good protection and be pleasant to the eye. It must also be sufficiently substantial to ward off biting winds and live intruders.

A wall is an ugly thing in a flower garden, although a

good protector. To hide its unseemliness, it may be covered with ornamental creepers, or with fruit trees, which none can think an eyesore anywhere. A wooden fence, for its own duration and to keep it from being a harbour for insects, should be well tarred. Almost all walls, for their own protection and that of the trees and plants trained against them, should have a coping at the top to project a little beyond their surface, thus preventing the rain from soaking into the substance of the wall, and trickling down its sides to the injury of the plants. A wall of earth by itself has not the power of withstanding wear and tear for a length of time; but if it have the protection of a lattice against it and a coping at the top, it may do. A wall of turf, also, may be made lasting under proper treatment. Let it be three feet wide at the bottom, tapering to fifteen inches at the top, and sow it well with furze seed, which may be bought at the seedsman's at 1s. 6d. per pound. When the furze grows, clip it, and keep the whole surface regularly clipped, and in time it will be like a good-looking green wall. Ornamental wire fencing is neat, and does very well, provided a more substantial screen be not required for shelter. Evergreen hedges always look nice, bright, and pretty, and with the constant care they are likely to get if their home is the flower garden, they are sure to do well: they are thick when shelter is most needed, and almost all the year round form a pleasant screen for the eye to rest on, and a good background for bright vegetation and gay flowers. Laurel, yew, and holly, are all good, as are also the evergreen privet and box, if the locality be one which favours its growth. Many recommend mixing in the hedge flowering trees and shrubs, such as *laurustinus*, *Cydonia Japonica* (formerly known as *Pirus Japonica*), flowering currant, and double-blossomed furze; but for the convenience of keeping the hedges constantly clipped, it is better to plant such trees apart from the hedge, although they may be placed in front of it, so as to break its uniformity. A hedge of ivy, trained in a thick mass over an open paling or wire fence, forms a good background. It has the advantage that any inex-

pensive fence under it will do, provided it have strength to bear the weight and to stand against the wind.

Deciduous hedges are not good, as, from being bare of leaves in the winter, they fail to give shelter when it is most needed. Some one stated (I think in the *Cottage Gardener*) that a hedge of hawthorn is *worse* than useless for shelter, as the cold wind positively becomes colder in passing through it, from the moisture retained in the foliage.

For gravel paths, complete drainage is only necessary in a very damp locality, or where there is a great rush of water from higher ground near at hand. In such cases a system of tile-draining to the paths may be requisite. Generally, however, a thick substratum of draining material, laid in when the paths are made, will suffice. Shape out the paths exactly, and remove the earth in their whole course to the depth of eighteen inches, making a clean square trench. Then spread stones, oyster shells, and collections of rubbish, consisting of broken crockery and such like hard material, or burnt brick clay, so as to fill the trench; let this lie for a time, ramming it down repeatedly. After a few days, or a few weeks, according to weather and labour bestowed, there will be a space of six or seven inches above it to the top of the trench. Lay on a layer of coarse gravel, from four to six inches thick, and let it be well rammed down and rolled as flat as it can be. At this stage of the path-making it is best to plant the box edging to the beds. One yard of old box edging, if well divided, will make several for replanting. Divide the box thoroughly, and throw away all that has grown too woody; that which is replanted should not be thicker than a crowquill. Trim the roots of the plants so that the plants may be about four inches in length, and place the tops exactly even. Make a trench, or rather cut, three inches deep, or rather more, by pressing the spade into the earth, and moving it backwards and forwards a little to give sufficient width to the opening at the top, and let the perpendicular side of the cut be towards the bed. Then place the little box plants against the per-

pendicular side of the cut, with the top edge exactly even, and (as the roots will not be even also) press in the earth with your left hand while you still hold them in their place, so as to fix them. The plants should touch each other, and should be, when the path is done, not more than an inch out of the ground. Autumn and spring are the times for transplanting box, and it should not be done too early in autumn, nor left too late in spring. Beat the earth well down to the roots of the box, and then lay on the last coat of gravel to the paths. Spread a sufficient thickness of fine gravel, water and roll it at once, and continue to roll it until it is firm and smooth.

The late Mr. D. Beaton, that well known gardener and writer, recommends concrete paths, the construction of which he describes in the following words:—"A layer of stones, brickbats, shells, or clinkers, six inches deep, to form a dry bottom; a layer of chalk or lime, in the proportion of one to ten of the stones or other foundation, and well rolled and watered, to the thickness of three inches, with a rise of two inches in the centre; over this, half an inch of gravel and lime or fine chalk. Water and roll it well again. Add an eighth of an inch of fine gravel; and again roll it until it is quite solid. Have the walk two inches wider on each side than you desire, as this checks the turf and weeds from encroaching, and prevents the rain-water getting to the foundation of the walk." This would make a capital path, only I should give it more thickness of foundation than six inches, and also more than a mere sprinkling of gravel on the surface.

The lawn, whether it be left a plain surface of grass, or be cut out into beds, formed into a symmetrical parterre, or planted with standard roses and ornamental trees and shrubs, is always an important feature in the flower garden. It should be uniform in surface, and uniform in herbage; for if the surface be uneven it will be difficult to keep it well mown, without which it cannot look nice; and if it be sown with various kinds of grasses, &c., it will never appear of a smooth unvaried green. The best soil for a lawn is a sandy loam, or a

loam rather inclining to sandy. The earth should be not less than a foot deep; it should be drained if necessary, and the draining should be regular, so as to avoid swampy spots. Laying down cut turf is the best way of making a grass plot, for two reasons: first, as it is generally taken in the neighbourhood, it introduces the kinds of grass which do best in the locality; and secondly, it becomes a green surface sooner than the produce of seed, supposing, of course, that it gets sufficient watering and care. The season for laying turf is any time from September to April. The turfs are cut a foot wide, a yard long, and as nearly as possible an inch in thickness. Before cutting them the ground should be marked out, and cut downwards with a racer or rutter—a thin sharp instrument with a rounded edge, like a cheese-cutter, fixed to a handle about four feet long. They should then be raised with a turfing-iron—an implement with a flat arrow-shaped blade, for cutting up the turf, fixed to a handle which goes straight from the blade for several inches, then turns at an angle and turns again at a second angle, so that the handle is above the ground, while the blade is at work beneath it. As one man cuts the turfs, another should roll and remove them. They are unrolled as they are laid, placing edge to edge with great exactness, and mending and filling in the broken parts as they are laid. As soon as the grass is laid, it should be beaten flat, rolled repeatedly, and watered if the weather be dry.

If it be thought better to sow seed than to lay turf, the following will be found good sorts: yellowish oat grass (*Avena flavescens*), crested dog's tail (*Cynosurus cristatus*), fine rye grass (*Lolium perenne tenue*), wood meadow grass (*Poa nemoralis*), evergreen ditto (*Poa nemoralis sempervirens*), rough-stalked meadow grass (*Poa trivialis*), white clover (*Trifolium repens*), smaller yellow clover (*Trifolium minus*), fox-tail meadow grass (*Alopecurus pratensis*), sweet-scented spring grass (*Anthoxanthum odoratum*), meadow grass (*Poa pratensis*). A mixture may be made, according to circumstances, and sown early in spring.

Spergula pilifera forms a moss-like carpet, which is said by many to be better than grass for a lawn. Where it takes well, it maintains a bright uniform green; in shade, where grass often will not thrive, it does well, and on hot sunny banks it will do with watering. It has the advantage of not requiring mowing, and its pretty little white flowers are very fragrant, and are great favourites with bees. The surface to be planted with it should be manured, and then prepared as for another lawn, and gently rolled. Break up the spergula turf into bits two inches square, or rather less; plant the bits two inches apart, roll the ground and give one good watering. Keep the surface weeded, roll it once a week, and when it has taken, it may now and then have a watering with liquid manure. It may be grown from seed. It is especially good for small lawns, borders, and banks. The Messrs. Carter, of Holborn, sell the turf in small quantities, 2s. for enough to plant a square yard, and, I believe, charge less for a large surface. They supply the seed also.

The soil of the beds must be made according to the use to which they are to be devoted. The productive earth forming the beds should be about three feet in depth. Clay imparts tenacity, sand gives lightness, and chalk and lime have an intermediate effect. The due mingling of these earths may render heavy soils more friable and light soils more retentive. The constant addition of animal and vegetable manures is continually altering the quality of earth under cultivation, and the different proportions of it and of the different kinds of earth must form the constant study of the floriculturist. A light loam, greatly enriched with decayed vegetable matter, is an excellent soil for the flower garden; but as various plants differ in their likings and requirements, no set rule can be given. Planting the garden, and modifying the soil, so that the vegetation may like its position, and the position suit the plants, are two things which must accommodate themselves to each other. In laying out and planting we must consider for what the situation and capabilities of the garden are suited, to the end that our work may turn out a credit

and a satisfaction, rather than a loss and a disappointment. With a sweet mild sheltered position, clear country air, and a fine soil, we may attain almost any amount of floricultural success; but if our field of action be a small wall-enclosed space, on which the smoke of some great town beats pitilessly down, we must confine our horticultural ambition to the few plants which can accommodate themselves to such circumstances, and be very glad that there are a few which can.

CHAPTER III.

THE TOOL-HOUSE AND ITS CONTENTS.

HOWEVER true it may be that a bad workman finds fault with his tools, it is no less so that a good workman wants good tools; and this is in no case much truer than in the flower garden.

A good tool-house and potting-shed are essential adjuncts to every garden. The tool-house should be fitted up with shelves for stowing away mats, canvas, netting, and things of that kind used at times only for covering and shading. The walls should be covered with supports, pegs, nails, and hooks, among which every long and short handled tool, watering-pot, fumigator, hammer, axe, and other tool should have its place, to which it should be returned, cleaned, every time it is used. The habit which many gardeners have of leaving their tools about when they have done using them, is extravagant and mischievous to a great degree. The tool-house should also have shelves for boxes whetstones, roses of watering-pots, and water-engines, tallies, pegs, and all small things so likely to get mislaid or lost. There should also be hanging boxes and other receptacles for shreds, nails, cords, lines, and such like. The wheelbarrow and water-engine should always go under shelter when their work is done, and some old casks for the preservation of any fertilizers that wet would injure, will be

useful. Almost any spare corner out of sight will do for the tool-house, but it should be dry, or else shears, knives, saws, and bettermost tools of that kind must not be kept in it. Spades, shovels, rakes, hoes, forks, and trowels, are too well known to need many words respecting them. With regard to these and all other tools, it is the best economy to buy the best of their kind. All eccentric unions of two tools in one I reckon more dangerous than useful.

Spades are made of three sizes, and it is best to have two for a medium-sized flower garden. The largest, or the second size, may be chosen according to the strength of the hand which will have to use it, for the chief of the digging; and the smallest will be useful among the flowers in rather crowded borders. There is also a deep spade much scooped, which is very good for getting up plants with a good ball of earth. A really good spade will wear with a good edge throughout. A shovel is a kind of spade, broad in make, and rather hollowed in form, and is used for removing earth and such like jobs.

It will be found convenient to have rakes of three sizes: one of a rather large size, for the main portion of the raking; quite a small one for raking in amongst the flower roots; and a third, with short teeth, for surface tidying. A wooden rake is useful for getting together the cut grass on the lawn, but in its absence the large iron one will answer the purpose. A daisy rake is an implement for removing daisies and other intruders of the kind from lawns.

The hoe is used for cutting up weeds on the surface of the ground, and for earthing up plants, by drawing earth up round the roots. The Dutch hoe is fixed straight on the handle, whereas the common hoe is placed at an angle; thus the gardener works from himself with the one, and towards himself with the other. They are tools of constant utility, as the surface of the ground can scarcely be too often stirred. A small and a medium-sized hoe, and a medium-sized Dutch hoe, will find plenty of work in a flower garden. The spud is a little

tool of constant utility. It is like a wide-made chisel, set on the end of a long handle, and is good for cutting up weeds on grass, paths, or beds.

The fork is an implement which should be always used in the flower beds in preference to the spade; it is less labour, it pulverizes the earth better, and it is less likely to do mischief among unseen roots. A light fork, with three prongs, is best for common use. A four-pronged fork is also good for some purposes. A tulip fork—a nice little three-pronged fork, with a handle little more than a foot long—is a most useful tool. It is especially handy for ladies, as with it they can fork as much as is necessary, while they stoop over a bed to plant and arrange it. Where the ground is large enough to require a large assortment of tools, a leaf fork will be found handy: it is a large four-pronged fork, made of wood, shod with iron, and it will enable one person to take up more leaves than two can without its help, as it is large and light, and the leaves do not fix to it as to a common fork. One trowel will be enough; it should be kept clean and bright, and it will have plenty of work to do.

A large garden will require a good water-engine. For it to work well and last well, the workmanship must be very good, and therefore it is a dear thing to buy. A good one will cost several pounds. The hydropult is a water-engine, the pipe of which can be placed in a tank, or in a vessel of water; its cost is two guineas, and there is one of smaller size for 35s., which a lady can work. It is sold by E. N. Button, 27, Leadenhall Street, London, E.C.; it is recommended by all the leading horticultural periodicals, and it works very well. Some at a lower price have been advertised, but in the purchase of a thing which should last for years, I doubt the economy of buying a less efficient article, because it is cheap. The hydropult works until the reservoir is exhausted. Watering-pots are made of all shapes and sizes. The roses of some should be finely perforated that the watering may the more nearly resemble rain. Besides common watering-pots of all sizes, there are long spouted watering-pots for watering the plants on the shelves of a green-

house; French watering-pots, with zigzag bends in the spouts, to break the force of the water as it descends upon the plants; and shelf watering-pots, small and flat in shape, for watering plants that are high up and in out of the way corners, and near the glass in greenhouses.

Allied to the apparatus for watering is the syringe, an implement of great value to the floriculturist. It may be used, held at a distance from the plant, for the purpose of giving a soft refreshing watering, or held near the plant, the water may be impelled with force to destroy the aphides. Syringes are made in three sizes; the cost of the smallest is 5s. 6d.; we have had one in use for several years, for which that sum was paid; it was made by George, of Camden Town.

A fumigator is also a good thing to have, for fumigating plants when they are infested with insects. It is on the plan of the blast bellows used in houses, and to it is attached a reservoir for the tobacco, or whatever may be used for fumigating. It is rather dear to buy, the price being, I think, 10s. 6d.

A turfing iron, for raising turf, is scarcely needed in a private garden, where laying a lawn is a matter of rare occurrence; but the sharp tool with a circular edge, called a racer or rutter, is wanted wherever there is a lawn, or edging of grass, for trimming the edges.

Some sort of greenhouse, for raising plants, is most valuable to aid the flower garden, and almost necessary where a great number of bedding plants are required. For the purpose of raising plants for the beds and borders, a house with vines in it will do, as by the time they give shade from being thickly covered with foliage, the seedlings and the plants which have needed winter protection, will be ready for putting out.

In the absence of a greenhouse, a good roomy frame may be made to do a great deal in rearing plants and cuttings. Any out of the way warm corner will do for a hotbed and frame. That old writer on gardening, Abercrombie, gives, as dimensions for a one-sash frame, $4\frac{1}{2}$ feet from back to front, $3\frac{1}{2}$ from side to side, 15 inches or 18

inches high at the back (for preserving garden plants, 18 is best), and 9 inches in front; for a two-sash frame, $4\frac{1}{2}$ feet from back to front, 7 feet from side to side, and the same height as the smaller, with a good stout well fixed bar in the centre, from back to front, to support the sashes; for a three-sash frame, $4\frac{1}{2}$ feet from back to front, $10\frac{1}{2}$ from side to side, from 18 inches to 2 feet high at the back, and 9, 12, or 15 inches in front; these, of course, must have two cross bars. The larger frames may be deeper, because they will need more depth of earth. The woodwork should be of $1\frac{1}{4}$ -inch deal, planed and neatly put together, that there may be no cracks to hold wet or harbour insects. The cross bars should be 3 inches wide, and dovetailed in front and back, that the sashes may shut down close, and a slat of wood should be set on at the sides of the frame, for the sashes to drop against, leaving the front and back without this addition, for the convenience of drawing the sashes up and down. The sashes should extend beyond the frame at the top, and be made of $1\frac{1}{2}$ -inch wood, and should be $2\frac{1}{2}$ inches wide; the cross frames should be an inch wide and an inch and a half thick, as in this part it is not good to interrupt the light more than necessary; these may be nine or twelve inches apart. The frames should have three good coats of paint to begin with, and should never be more than a year without painting. Of course the frame must be placed with the high back to the north, so that it may slope towards the south.

In sharp weather the sashes will want to be covered, to keep out the frost. This is generally done with mats, and other materials that absorb wet, which then lowers the temperature of the air within the frame, instead of retaining the heat. To obviate this, a framework may be made to cover the lights in severe weather, and ward off wet also. Make a lattice of stout laths the size of the frame, or, if it be a large one, the size of the lights, making one for each sash. The laths of the lattice may be a foot apart. Lay on it a mat, and over the mat fix a thatching of straw from three to six inches thick. These may be put on and taken off as the weather renders pro-

tection necessary, they will give less trouble than covering of other kinds, as well as being better for the plants.

A good supply of hand-glasses is very useful. Those of cast iron are good and durable. There are some which are made square with movable tops: the square frames which form the lower parts fixing together with pegs at the corners. Bell-glasses, too, for raising cuttings, may be named.

Shears, knives, and scissors of different kinds, and a few other implements will be wanted for pruning, budding, grafting, and all processes of that nature.

A wheelbarrow of light make, with a broad wheel to prevent disarrangement of the gravel, and boards to fit in so as to make it deep in case of necessity for the collection of light rubbish in large quantities, will be required. A hand-barrow too is useful, its greatest drawback being that it requires two persons to move it about. Perhaps the best hand-barrow for the flower garden is a strong wicker basket, set between two poles, as it is light and manageable, and answers the purpose well in collecting weeds as they are drawn, dead flowers, cuttings, and small pots, full or empty.

A scythe or a mowing machine, one or the other, or both, must have a place among the implements where grass has to be kept in order. A mowing machine is dear to buy (from three or four pounds to thirty) and complicated in make, and must consequently be treated with care, by being thoroughly cleaned and oiled after every time it is used. Many who have no prejudice against the mowing machines are deterred from buying one by its cost, and continue the use of the older implement, the scythe. This must be of good metal, and have for a companion a good stone for sharpening it.

In addition, a good heavy roller is indispensable; a ladder will be needed if there are tall-trained plants, and the following small items are wanted at times—a line, a measuring rod, a dibber (one may be made out of an old spade handle), a sieve, a saw, a hammer, a pair of pincers, a broom, and baskets. Things for use to be kept in store are nails, shreds, mats, netting, poles,

stakes and sticks, garden pots, labels, lime, sulphur, tobacco, &c.

Conveniences should be arranged in the form of water-tanks and butts (kept tarred when necessary), pipes, and all such appliances for catching the rain-water which falls on all the roofs, for the use of the garden.

CHAPTER IV.

ORNAMENTAL TREES AND EVERGREENS.

By ornamental trees, I mean all which may, with good effect, find place in the flower garden and such surrounding pleasure ground as often appertains to a dwelling of moderate pretension. The list of such is so extensive that a mere catalogue might fill a volume; I will therefore only mention a few suggestively, and they will be quite enough to choose from to plant a shrubbery of moderate size ornamentally.

Perhaps the largest kinds admissible into the precincts of the flower garden, or its immediate neighbourhood, are the Horse-chestnut and the Catalpa. Not that we need shut out many trees which grow as tall, but these are bulky from growing wide as well as tall, and from bearing a bold foliage. There are spots where a large thick tree will grow, and its shelter be valuable, and for such a position it is nice to have one which is handsome in foliage most part of the year, and gay and beautiful with flowers in its season. The horse-chestnut loves a deep rich loam; the common sorts grow readily from the nut: other kinds grow from grafts, buds, or layers. The bloom of the common horse-chestnut is so grand and showy, yet so delicate and soft in colouring, that I do not think any of the newer kinds surpass it in beauty; but the red-flowered (*Æsculus rubicunda*) is very much admired, and it has the merit (for grounds of

limited dimensions) of not growing so large as the common sort). Whitley's scarlet is a beautiful variety. For the bloom to be full coloured, shade is required. The yellow-flowered kind bears the chestnut in a smooth husk. There are of the same kind red and white flowering sorts, and some of them are shrubs.

The *Catalpa syriacæfolia* is hardy, and deserves a place in our shrubberies, from its splendid foliage and handsome flowers. It must have a dry situation, and it requires plenty of air: it is propagated by seed or by cuttings of the root.

The *Magnolia grandiflora Exoniensis* deserves a place in every garden where there is a sufficiently warm situation for it, from its handsome foliage and magnificent and deliciously scented flowers. It thrives in a rich loam, but prefers peat. It will flower freely only in a favourable situation, so it is frequently grown against a wall. It flowers from August to October. There is a rarer variety, *Magnolia grandiflora præcox*, with broader leaves and larger flowers, which flowers in July and sometimes in June. In buying young magnolia plants care must be taken that they are plants which have been raised from layers, as the seedlings are many years before they bloom. The *Magnolia conspicua* flowers in the spring, before the leaves are out, and the flowers are not nearly so large as those of the *grandiflora*. There are also several other beautiful varieties. The bark and wood of all are fragrant.

Those elegant-growing, graceful-foliaged trees, with white sweet flowers, which we have always been in the habit of calling Acacias, but which are in fact Robinias, are beautiful for a screen, or to mingle with other trees in a walk near the house. The rose acacia, *Robinia hispida*, with beautiful racemes of rose-coloured flowers, is a great ornament to the screen of a flower garden or of a shrubbery. The wood of these trees is very liable to break. They do well in a rich soil, and are easily propagated by layers, cuttings, or suckers, and also by seed, but the seed should be soaked in warm water, and left in it for twenty-four hours.

The Almond, that glory of suburban gardens, is both pretty and sweet, with the additional merit of blooming very early. The tall kind is produced by grafting on plum stocks, and the dwarf by suckers. When almonds are planted for ornament they should be placed against a background of evergreens, because they produce their delicate pink flowers before the leaves come out. When so planted the effect is very beautiful.

The gay and graceful Laburnum produces its charming early bloom in almost any situation, and has the merit of doing well even very near to large towns. The Scotch laburnum, *Cytisus Alpinus*, has finer foliage and larger flowers than the common kind; it is scented, more pendant, and flowers later in the season. Rabbits and hares bark the trees, and will choose the laburnum in preference to any other tree. Laburnums grow readily and quickly from seed, and there are several choice greenhouse kinds which must be grafted or budded on the commoner sorts. Among laburnums which grow in gardens there are some with variegated foliage, and one which produces a double white flower. The Broom belongs to the same family, *Cytisus*; its peculiar sprayey growth makes a great variety in the shrubbery, and its yellow and white flowers are both of them gay and pretty.

Lilacs are useful in the flower garden; for the tender green of their foliage is as early among leaves, as their gay masses of fragrant bloom are among flowers; and they too have the merit of living and doing well in and near towns, where few things so pretty will live.

The Hawthorn, or white May, and the pink May, are encouraged in gardens on account of the beauty and strong fragrance of their early bloom. The double pink May is beautiful, being covered with abundance of bloom like tiny roses, but it is not scented. The Glastonbury thorn, a variety of the common hawthorn, is said often to flower at Christmas. The evergreen thorn, *Crataegus pyracantha*, or burning bush, looks well trained against a wall; it has shining leaves and pure white flowers, and in winter is covered with brilliant scarlet fruit. A

dry situation is the chief requirement of the hawthorns. The common hawthorn is propagated by seed which will sometimes lie two years in the ground, unless it be prepared for sowing beforehand: this is done by throwing the seed in a heap for several months, but it must be frequently turned over during that time, or the fermentation would destroy vegetation. The finer kinds are generally grafted or budded on the common thorn. The *Ereobotrya Japonica* or Loquet-tree, is very handsome, with clusters of white flowers, and yellow fruit. It is generally obtained by being grafted on the hawthorn. It requires a rich loamy soil, and it is delicate, but in a warm situation it will do in the open air, if it be protected from frost.

The double-blossomed Peach, the double-blossomed Cherry, and several trees of the cherry kind, are very ornamental, and quite deserve a place in the flower garden. They grow in common soil, and are propagated by grafting, or are raised from seed.

The Larch, Birch, and Mountain Ash should never be forgotten by those who want a picturesque outline in screen or shrubbery. The tall larch, and common white birch, form a pretty contrast with other trees, and there are also weeping varieties of both. The mountain ash will grow almost anywhere; it has a tall handsome growth, and is gay in winter from its profusion of large bunches of scarlet berries.

The Tulip-tree is very hardy, of large growth, and fine foliage, bearing handsome tulip-like flowers: it looks very well standing out on a lawn. It was introduced from North America, and does well in a deep rich loam. It is generally raised from seed: if it be sown in the autumn it will come up the following spring; but if it be not sown until the spring, the seed is said often to remain a year in the ground.

The Liquidamber is another American tree of large growth, and there is also a smaller variety from the Levant. It is quite hardy, prefers a moist loam, or any garden soil provided it be moist, and is splendid in the foliage in autumn. It is grown from cuttings, layers,

and imported seed, which should not be shelled out of the catkin until it is wanted. It is often a year before the seedlings show themselves.

The Copper Beech makes a good contrast when planted among trees of different foliage.

The Osage Orange, *Maclura aurantiaca*, has been so much talked about in its own country, North America, that it may be interesting to grow it in our gardens, on account of its ornamental orange-like fruit, and also because it has been mentioned as one of the trees with the leaves of which silk-worms may be successfully fed. It will grow in peat or loam, and may be propagated from cuttings of the root or layers. It is a thorny tree, with shining yellowish green leaves, and rather small white flowers, with pistil and stamens in different flowers. It wants protection in severe winters.

Abundance of evergreens are almost necessary. In winter they are invaluable, and for spring a good tall background of them should be provided for the early flowering trees, especially the almond, double-blossomed peach, *Magnolia conspicua*, *Cydonia Japonica*, and all trees and plants which flower before they put out the graceful clothing of foliage.

The common Laurel (*Cerasus laurocerasus*) and the Portugal Laurel (*Cerasus lusitanica*) are valuable, not only for their fine foliage in winter, but also on account of the abundance of their handsome spikes of flower. They are propagated by layers, and grow rather quickly.

The Holly, so many kinds of which are variegated in the foliage, are slow growers, and often difficult to establish. They like a rich dry soil, with free air; and will not bear smoke nor overshadowing by other trees. There are eight varieties: silver-edged, gold-edged, thick-leaved, prickly, yellow-leaved, variegated, spotted, and recurved. The leaves of the bottom of the tree and those from its upper shoots are often curiously varied in character.

To produce young plants from seed gather the berries when they are ripe, and place them at the bottom of a hole three feet deep: crush them and mix them up with

a little sandy loam ; fill up the hole with the earth again, and throw over the spot a covering of litter, or something of the kind, to keep off wet and frost. Dig them up and sow them in March.

The end of August is the best time for removing large hollies. Tie the lower branches well together : mark a circle two feet from the stem, and a second two feet beyond it, and dig out the earth between to a good depth. Dig, at the place to which the tree is to go, a large deep hole (larger than the root will require), throw in some good soil, and with it and water make a puddle. Work round the root of the tree, leaving a good ball of earth, and when it stands loose wrap it round with garden mats, old carpets, sacks, or such like, and tie the ball firmly together with a rope : wrap the stem round in the same way, and fix to it a stout pole eight or nine feet long. Lower the tree gently, and remove it, by the aid of as many men as are necessary, to its new position, taking care to lower it gently into the puddle, and rather above than below its former level. Remove the incumbrances, and fill up the hole with good earth. Puddle the surface, and fix the tree with props so that the wind cannot shake it. Trim hollies with a good sharp knife (not with shears), quite early in the spring, before they begin to shoot. The less pruning the better ; but encourage the leader, by stopping laterals which would interfere with it.

The *Aucuba*, which is so gay in foliage that it can scarcely be out of place anywhere, is best increased by layering, and its merits make its increase desirable, for it will accommodate itself to any soil, and any circumstances. The smoke of London, and the drip of trees, do not daunt it ; so its bright mixture of colour and bushy growth come in where they are most needed. In addition to the trees I have named, there is a long list of evergreens from which to choose—cypresses, pines, firs, cedars, junipers, arbores vitæ, and evergreen oaks, besides shrubs of various growth.

Of trees which are especially fitted for planting out on a lawn, there are many, both deciduous and ever-

green, among which may be specified the Cedar of Lebanon, and *Cedrus deodora*. To promote fine growth in the last, great care should be taken not to injure the leading shoot, without which it is almost impossible to get a tree to a handsome growth. It does best in a deep sandy soil. The tulip-tree has been mentioned already. A weeping ash is a handsome tree to plant on grass, and it may be arched widely asunder on a large hoop, concealed among the branches.

The *Araucaria imbricata*, or Chilian pine, is quite hardy, and its peculiar growth shows very well when it stands alone. The soil for it is a good friable loam, and it may be grown from cuttings of young ripened wood, under a bell glass, in a cool shaded place. The splendid but delicate Norfolk Island pine is of the same family.

That magnificent conifer *Wellingtonia gigantea*, the loftiest of known trees in its native country, is a perfectly hardy evergreen, and looks very grand on a large lawn. It may be increased by layers and cuttings.

There are two other plants which are so well adapted for single objects on lawns that I must name them here, although they may seem out of place among trees.

The *Yucca*, with its stout sharp-pointed leaves, of stiff growth, and fine branch of large flowers, looks very well on grass. It does best planted on a knoll, requires a deep dry sandy loam, and may be increased by offsets from the old plant. It is also grown from seed. It is best to mat up yuccas in the winter, to protect them from frost and too much wet.

A fine tuft of Pampas grass is ornamental on the lawn, where it is often planted in conjunction with a pillar or statue, although many prefer seeing it simply standing alone. It is hardy, only requiring a little protection in very severe winters. It is propagated by offsets from well-established roots. It is very large, showy, and handsome, especially when in flower, and may be grown from seed; but for the seed to be produced the male and female plants must be planted together.

CHAPTER V.

ORNAMENTAL SHRUBS AND CLIMBERS.

SHRUBS which are ornamental in their growth, or in their flowers, are very abundant.

The *Arbutus*, or Winter Strawberry, is a hardy evergreen, the bright-coloured strawberry-like fruit of which is gay and pretty in winter. It thrives in common garden soil; it is propagated by budding or in-arching, and may also be grown from seed. In favourable situations it grows to the size of a tree.

The Winter Cherry is also a useful plant, of dwarf shrubby growth, the showy flowers of which are succeeded by bright red berries, no less ornamental in winter. The bladdery calyx does well in making skeleton leaves, among which from its peculiar shape it forms a pretty variety.

The Myrtle is a universal favourite, from the beauty of its foliage and flowers, and also from their delicate delicious fragrance. In Dorsetshire and the western counties, Ireland, the Channel Islands, and all mild localities, myrtles will do out of doors all the year; but in less favoured spots they have to be housed during winter. The rich beauty of their glossy foliage is very charming; a tall well-grown tree is splendid. Cuttings will strike readily. They may be kept in a bottle of water until the roots grow, and then be planted, or struck in sandy soil, under a bell glass.

The *Laurustinus* is a beautiful evergreen bush, which flowers abundantly throughout the winter under favourable circumstances. It grows readily, by layers, and November is the best time for removing it. The Guelder Rose, or Snowball-tree, is a deciduous shrub of the same family, which is beautiful in the spring, with its great balls of snowy white flowers, and which will do

well in confined neighbourhoods. It will grow from layers, and cuttings will do if they are kept moist and shaded.

The Sweet Bay is an evergreen shrub which should find a place in every garden. It likes a sheltered situation; but when a fine tree is killed down to the root by frost, hopes of it need not be given up too readily, for I have known old roots spring up again when the trees have seemed quite dead. It is very ornamental, from its beautiful deep green. It is best propagated by layers.

The Kalmia is a handsome evergreen from North America, producing beautiful red flowers in June. It may safely be grown in the open air. It thrives best in sandy peat, but it will do in sandy loam and leaf-mould. It may be grown from cuttings of the young shoots, planted in sandy peat, and placed under a hand glass, in shade, from layers made at the end of summer, or from seed sown in shallow pans of sandy peat, covering the seed very thinly, and keeping the pans in a close frame. While quite small the seedlings should be pricked out three to each pot, and planted out the following spring. Kalmias are nice plants for early forcing.

The *Hibiscus Syriacus*, or *Althæa frutex*, is an old-fashioned, but beautiful hardy shrub, producing abundance of handsome flowers in summer. There are white, double white, purple, double purple, red, and variegated. They require an open sunny situation, and are chiefly propagated from seed, but the double ones by layers, and by cuttings of ripe shoots, placed under a hand glass in autumn, and kept covered through the winter. They may likewise be grafted. They will do in common garden soil.

The Syringa, English Orange, or Philadelphus, is well known, from the scent of its pretty white flowers being like that of the orange blossom. Although it is commonly called syringa, it is in no way related to the lilac. It is quite hardy, and not at all particular, growing near London, and under the drip of trees. It may be propagated by seed, layers, cuttings, or division of the root.

There are several varieties. No garden should be without this flower, of peculiarly delicious scent.

The flowering currant, *Ribes sanguineum*, for its bright pink, abundant early bloom, and pretty growth, should be plentiful in every garden of flowers of various heights. The trees begin to flower while quite young, and go on until they are tall and large. I have had one as much as twelve feet high, when it was really a splendid object in spring. They grow readily from seed or cuttings, will do in any garden soil, and in almost any locality, objecting but little to smoke and confined air. There are several sub-varieties, differing in the colour of the flower. There are also *Ribes* of other varieties, all of which are hardy except *Ribes punctatum*, which is a native of Chili.

The fruit-bearing Berberry, generally called Barberry, is very ornamental. A pretty way of growing it is to train it to a single stem, when it forms a head, which falls over gracefully, and looks very gay in spring, covered with its yellow blossom, and again in autumn, with its abundance of bunches of polished scarlet oblong fruit. There are five sub-varieties deserving notice: the scarlet, with and without stones; the black, the fruit of which is sweet, but which is tender enough to require a sheltered border; the purple; and the white. The seedless kind, *Berberis vulgaris asperma*, is preferred for preserving. The fruit is ripe in October; it has a fine acid, and makes a most delicious preserve, either plucked from the stalk or in bunches. The bunches are also preserved in salt and water, for garnishing, and it is good for candying. It does best in a sandy or chalky soil, with dry subsoil, and it may be propagated by cuttings, suckers, or layers, in spring or autumn. As it is a tedious little fruit to gather, the bush should be well cut out in the centre, like a gooseberry. The spines are so sharp and strong that it is a good plant to fill gaps in hedges to keep out trespassers.

The evergreen Berberry (*Berberis aquifolia*) is a hand-

some thick-growing shrub, with beautiful dark tinted foliage, producing abundance of yellow flowers in spring, and later in the year clusters of bloom-covered purple berries. It may be grown from seed sown in spring, cuttings planted early in the autumn, or suckers. It likes a deep sandy soil. The evergreen berberries are sometimes called Mahonias. There are several varieties, the rarer species of which are sometimes propagated by grafting.

The *Andromeda* is a splendid evergreen shrub, many varieties of which are hardy. A peaty soil is best, although some of them will do in any garden earth; drought will kill them. Some kinds flower in the spring, and others in summer. To propagate them lay down layers in September, and do not disturb them for a year. They may also be increased from seed, sown as soon as ripe, covered thinly with earth. Place the pans or pots with the seedlings in a cold frame, and let them have plenty of air.

The *Gaultheria* is a hardy shrub, with white flowers like those of the arbutus, and berry-like fruit, which is good to eat. The *G. procumbens* grows close to the ground, and flowers in July; the *G. shallon* is taller, and flowers in May. Both kinds like a damp situation, but will grow, flower, and produce fruit in London.

The Snowberry is a bushy shrub, producing delicate tiny pinkish flowers in summer, and covered with a quantity of fruit of snowy whiteness through the winter. It grows in any good common soil, and is increased by suckers, or cuttings planted in the autumn.

The *Halesia*, or American Snowdrop-tree, is a tree in its own country, but a bush with us. It will grow in a poor sandy soil, by water. The flowers are white, and like snowdrops, and the seed is curiously winged. The trees are generally increased by layers, but they ripen seed with us.

The Cotoneaster is a pretty evergreen, with small glossy foliage, which makes a nice-looking screen for any low bare object. It is gay with flowers in the spring,

and with peculiar-looking bright red or black berries all through the winter. It is hardy, grows on common soil, and is easily increased by layers, or from seed.

The Box Thorn is a quick-growing sprayey shrub, called, by a great mistake, the Tea-tree. It deserves encouragement in gardens very near to towns, because it is one of the few things which will thrive there, and also on account of its rapid growth and the quickness with which it will cover an arbour or unsightly wall. It has a pretty little flower, followed by a berry of a bright coral colour; and it may be increased from cuttings of ripened wood in spring or autumn, under a hand light.

The Bladder Senna is another quick-growing shrub, which is valuable from thriving in almost any soil, and under almost any circumstances; it does not seem to mind a confined spot near a large town. Its yellow flowers are followed by bladder-like seed-pods, which are quite as ornamental. It may be grown from seed, layers, or cuttings.

The *Nitraria* is a low shrub, bearing white flowers, which is valuable, from thriving near the sea. It is very hardy.

The Tamarisk is a tall tree-like shrub, which is valuable on the same account. It is very good in withstanding the sea breeze, produces pretty little pink flowers, and grows from cuttings taken in autumn.

The double-blossomed Furze, from its peculiar growth and bright yellow flowers, so curiously nice in scent, deserves a place in every flower garden where a corner can be spared for it. It likes a sandy soil, and flowers abundantly in May. It may be propagated by cuttings in spring and autumn, which should be planted in a shady border, under a hand glass. For a hedge (where there is space to spare for a hedge of furze), it is much handsomer than the common furze.

The Sumach is a bush of tree-like growth, which comes in well in the garden on account of its facility of growth, bold foliage, and the brilliant colours it puts on in autumn. The sumachs are all poisonous. It likes a

light fibry loam, and may be increased from seed, layers, cuttings of roots, or shoots from the roots.

The *Ptelea*, or Shrubby Trefoil, is an American shrub, which also makes a variety on account of the fine yellow which the leaves assume in autumn. It will grow in any garden soil, and can be grown from layers and cuttings.

The *Weigela rosea* and *Weigela rosea alba*, both deserve a prominent place for the gay beauty of their abundant flowers and thick bright foliage. *Weigela rosea* bears flowers of a bright rose pink, and the other is paler in the green of the foliage, and the flowers are white. They are hardy, and may be grown from seed or increased by cuttings taken in spring and autumn, and struck under glass, or in a protected open border. It grows best in sandy loam and leaf-mould, and is a good plant for forcing.

The *Budlea globosa*, or globe-flowered Budlea, is a showy shrub, which is good in foliage, and also in its bright orange balls of flower, of peculiar but pleasant scent. There are several other Budleas, but this is the only one which is hardy, and it is sometimes killed in hard winters. It requires a dry sheltered situation, and may be propagated by well ripened cuttings, struck under glass in September, and kept indoors until the spring. The more delicate varieties may be treated in the same way, only in a higher temperature. *B. Lyndleyana* produces long spikes of flowers, of a fine lavender purple. They are great favourites with bees.

The double red-flowered Pomegranate is a splendid shrub for a warm situation, or to train on a wall, being no less pretty in the foliage than it is beautiful in the bright scarlet flower. It requires a deep loamy soil, and a warm but airy situation. It blooms in August, and in cutting it the twigs must be left unshortened, as it is they which produce the flower. The double kinds of *Punica*, or pomegranate, should be grafted on the single, which curtails their rampant growth, and makes them flower better. The pomegranate may be propagated by cuttings of the shrub or root, or layers, in a light rich soil, as well as by grafts. There are several

varieties: single and double red, single and double whitish flowered, and yellow. There is also a dwarf kind, requiring heat.

As the flower garden generally includes the front of the dwelling, and often, besides summer-houses and other erections of the sort, walls, trellises, and all things of the kind needing to be beautified, a good choice of ornamental climbing and creeping plants will often be needed. Ivy, that never-failing resource in covering unsightly objects, has many varieties; some large and bold in the foliage, some prettily minute; and there are several kinds of which the leaves are variously variegated, as to both the disposition and colour of the marking. A deep rich soil suits the common ivy; the tender kinds require lighter earth. It may be grown from seed, but the quicker plan is to plant slips in a north border in sandy soil, keep them moist through the autumn, and plant them out where they are wanted to grow, when they are well rooted. If one had room to spare, from giving plain information, to get poetical, all sorts of loving things might be said of ivy, unfailingly refreshing to the eye as screen or carpet where it alone will cling, and thrive, and beautify, and showing its sober green even in the smoke of densely populated towns. But I must leave it to the love that all feel for it, and turn to gayer climbers.

The *Bignonia*, or Trumpet-flower, *Bignonia capreolata*, is sufficiently hardy to stand our climate on a wall of south aspect. Its magnificent flowers render it one of our handsomest plants for a wall. It must have plenty of room. Cuttings root readily in sand, or cuttings of the root may be taken; they should be planted in spring or autumn, and covered with a hand glass. There are many beautiful tender bignonias; as they are very handsome, it might be worth while to try the least tender sorts out of doors, in a warm position, by grafting them on the *Bignonia capreolata*. *Tecoma radicans* used formerly to be called a bignonia; it is hardy; and *Tecoma grandiflora* is nearly so.

The *Cobæa scandens* is a climber of rapid growth, pro-

ducing in August a profusion of large bell-shaped flowers, which come green at first, and turn purple afterwards. The root must have plenty of room, and rather poor soil, to prevent its strength running to leaf instead of to bloom, and the shoots should often be stopped (*i.e.* the tips pinched off), to make the tree grow thick. It will climb by aid of its own tendrils, if its position gives it the opportunity; if not, it must be nailed up, or tied with bast. It is propagated by seed, sown in a hot-bed in March, or cuttings of firm side shoots, taken in summer. The root may be protected in the winter. *Cobæa scandens variegata* is a handsome foliaged climber of more recent introduction.

The *Wistaria*, which used to be called the *Glycene*, is beautiful from its profusion of large drooping racemes of bright lavender fragrant flowers in the spring. It requires a rich soil, and it should be watered in dry weather. It flowers well in the outskirts of London, and it will sometimes flower a second time in the year. The young trees are often backward in beginning to flower; they, and older plants also, will be benefited by the use of liquid manure, taking care to put it down a long way from the stem. The plant is easily propagated. The seed seldom ripens in England, but when it does it grows rapidly. Layers produce abundantly, as a long one laid down will root at every joint. It will also grow from cuttings of the plant and root. It is the *Wistaria Sinensis* which has fine large pale lavender flowers; the *Wistaria frutescens* has a flower which is smaller in size and deeper in colour, and which comes later. There is also a white early flowering variety, which contrasts well with the others, and does best when grafted on the root of these.

The *Maurandya Barclayana* is an elegant and delicate climbing plant which often dies in the winter. If it is planted in the open ground, it will not bear being overgrown by more rampant vegetation, but it will often do very well if the root be kept in the pot, as it does not need much room, and it can then be taken in for the winter. The flowers are of a beautiful dark blue. It must

have light rich earth, and it is propagated by cuttings in spring and autumn, or seed sown in spring.

The *Eccremocarpus* is a climber of vigorous growth, which does in our climate if the roots be protected in winter. Its flowers of orange scarlet are very handsome, and the seed ripens well. It flowers in July. It will grow in common garden soil, and it is best to cut it down to the root in autumn, and cover it with a sufficient quantity of straw and dead leaves to preserve it from frost, when it is almost sure to shoot up in the spring. It is easily raised from seed, which should be sown on a hot-bed as soon as it is ripe. The seedlings may be kept in a frame or greenhouse, and shifted two or three times before April or May, when they may be planted out. Cuttings also may be taken in August, and kept in a frame through the winter. It likes a light fertile soil.

The common blue Passion-flower, *Passiflora cærulea*, is hardy, and will produce its beautiful flowers in great profusion in the neighbourhood of London. It requires a good loamy soil; if the place where it is planted be not favourable in this respect, it is best to dig a pit two feet square and fill it with the right kind of earth. Some persons like the fruit, but it is insipid. There are many tender varieties, and some of the hybrids with the common sort are found to be hardy enough to grow out of doors. Cuttings of the young shoots strike readily in sand under a glass. The root had better have a little protection in winter.

The *Lophospermum* grows luxuriantly in the summer but dies down in the winter, so that cuttings should be made in autumn, and kept in a greenhouse or frame until the spring. It covers a trellis or wall very soon, and bears beautiful bell-shaped flowers. It will grow in any garden earth, if it be light, and if its roots are not crowded. The cuttings should be taken in August. Seed may be sown in a hot-bed in March or April, or the fleshy roots may be preserved through the winter in dry earth. There are three varieties bearing flowers, that are respectively rose-coloured, dark red, and purple.

Menispermum, or Moon-seed, is a handsome-looking

climber, with leaves of curious form. *Menispermum Canadense* is very hardy, will cover a space quickly and ornamentally, and bears drooping racemes of greenish yellow flowers of elegant appearance. It will grow in almost any soil or situation, and has a graceful growth if planted out alone and tied to a stake, leaving the top to droop over. *Menispermum Lyonii* has a purple flower. They flower in June, and they may be propagated by division of the root, by cuttings planted under a hand glass, in spring, or from the seed sown in spring.

The Virginian Creeper is admired for the brilliant hues which its foliage assumes in autumn, and for its quick growth. It grows from layers or cuttings.

The Canary Creeper, *Ampelopsis hederacea*, *Canariensis*, or *Tropæolum peregrinum*, is pretty, from the bright delicate harmony of its gay yellow flowers and pale green foliage. With us, it is a half-hardy annual and most useful creeper, covering a fence and keeping it gay until frost interferes. It may be raised from seed on a hot-bed in the spring. Plant out the seedlings where they are wanted in May, with a trellis or wall for support. A hot-bed is not *necessary* for raising these pretty creepers; the seed may be sown, as soon as it is ripe, in a pot, and kept in a room for the winter. Water the young plants regularly; when they shoot up train them to sticks, and plant them out in the spring. They are not particular about the smoke of towns, but will enliven London balconies with their gay green foliage and lovely flowers. The Nasturtiums belong to the same family, and they ought to be encouraged, not only because the berries make a most delicious though little appreciated pickle, but because the green of their luxuriant foliage is bright and tender, and their flowers are brilliant with every shade of yellow, orange, and maroon. If nasturtiums were rare, their pretty bright foliage and brilliantly varied flowers of peculiar shape would make them much sought after; but as a seed will spring up on any hillock on which it happens to fall, and clothe it with varied beauty, the plant does not get its due. When they are

wanted to climb, they must be helped to mount (like aspiring man), and afterwards they will cling by their own stalks, and root from the stem like ivy. Besides the tall kinds there are several dwarfs.

The Clematis, or Virgin's Bower, has many varieties, among which the common white is a general favourite for its extreme fragrance, and the bat's-wing clematis for its deep-coloured abundant flowers of large size and peculiar form. Most of the clematises like a dry situation. They may be increased by cuttings of firm side shoots under a glass in summer, or by layers in September.

The Honeysuckle deserves a place in the flower garden, on account of the sweet scent of the flowers. It is very hardy, and thrives in any common garden soil. The best way to increase it is to put down layers in autumn, after the leaves begin to fall.

The Hop is a good plant for training over an arbour, on account of the quickness of its growth, and the shade given by its bold foliage. Its pale green flowers are very ornamental. It likes a rich loamy soil, and can be increased by division of the root. There is a variety with variegated foliage.

CHAPTER VI.

HARDY HANDSOME FOLIAGE PLANTS.

THE beautiful variety and rich colouring in the garden is not dependant solely on flowers. The heavy green of some evergreens, "*deuil de l'été et parure de l'hiver*," forms a rich background for spring flowering trees and shrubs. While they sober down the rampant green in summer, they give a verdant screen in winter, when the eye hungers for green, and when the shrinking form of man, animals, and plants delights in its warm shelter. Foremost in beauty of foliage must therefore ever stand our evergreens.

A careful mixture of trees which leaf early with those which put out late will keep up a pleasant variety in the green of screens and shrubberies, from the first bright shoots of spring to the time when Autumn dips his brush in warm colouring, and dashes away among the foliage at random, as if to keep among us, to the pleased eye, the warmth we are so soon to lose.

For trees of bold foliage we have the catalpa, the horse chestnut, and the sycamore. For contrast to these, there are the birch, the lady of the woods, with her light feathery drooping sprays; the larch, with its peculiar growth and light tender green in spring; and the broom, contrasting with the others in the line-like straightness of its up-springing growth. There is no end to the variety which judicious planting and planning may effect in shrubberies and screens.

The different kinds of Ivy, some of which are splendidly variegated with green and yellow, and green and stone colour, and of which the varieties vary so much in size of leaf that they are like quite different plants, may be used in a flower garden in many ways to promote picturesque effect. Ivy is useful wherever a bare place has to be covered in small space of time. It will do for a wall, trellis, dead tree, or paling; or to cover the little rising ground round a pillar, fountain, or statue, provided of course that it will not be walked on or even stepped on. It will often grow where nothing else will. The broad-leaved Irish ivy grows the fastest of any kind. Some of the beautiful variegated sorts are *Hedera latifolia maculata*, a roundish-leaved sort, margined with pale yellow; *Hedera Hibernica foliis variegata*, which has a somewhat narrow leaf, with a green patch in the middle, the rest yellow; *Hedera helix maculata*, with leaves rather deeply cut, and irregularly but deeply margined with yellow; the new *silver edge*, a very small-leaved ivy, with a silver edge; gold striped, an elegant cut leaf, beautifully variegated; *Hedera elegantissima*, a plant with splendid leaves, irregularly and showily blotched with green and yellow; and last, not least, the old silver edge, an ivy of splendid large foliage, beautifully mottled with white

and green. Ivy requires a deep and rather light soil. Before it begins to climb, it is best to nail it up, as a tree is trained, and it will soon throw out rootlets and attach itself, if the substance to which it is trained offers any facilities whatever. The above-named variegated kinds are sufficiently hardy to stand our English winters, unless they happen to be most unusually severe. They may be propagated by cuttings on a north border, in a sandy soil, and they must be kept moist through the autumn.

The common ivy will grow to a height of 40 feet, and it is often wonderfully stout in the stem. The following dimensions may be named:—One at Brockley Hall, Somersetshire, stem 12 inches in diameter; one at Morpeth, 19 inches; and one at Gigean, near Montpellier, described by De Candolle, is six feet in circumference at the base: this covers 72 square yards, and is said to be 430 years old. There is also one near Fountains Abbey, the stem of which is 3 feet 2 inches in girth. A curious peculiarity in the ivy is the variety in the shape of the leaves on the same plant. It flowers in October, and the flowers are much frequented by bees and flies of different kinds. The berries are ripe by Christmas, when they form food for blackbirds, thrushes, and wood pigeons.

The variegated-leaved Colt's-foot is a low growing, very beautiful, hardy perennial, producing its yellow flowers in March. It is a native of Great Britain, and does best in a moist clayey locality. The leaves are put out after the flowers are gone off; they are large and roundish, with an angularly varied, toothed edge, and are boldly variegated with shades of green and white. They are covered with a cottony down above, and are white and woolly beneath. They can be increased readily from pieces of the running root.

The variegated Lily of the Valley, *Convallaria majalis variegata*, has its bright oval pointed leaves beautifully and distinctly striped with bright yellow. It requires a shady position, and soil of poor sandy loam. To keep the stripes distinct it is best to cultivate the roots in pots.

The variegated Mezereon is a handsome shrub, growing well on dry sandy loam without manure: it must have good clear air. It originated in a seedling, and is perpetuated by grafting, very carefully performed.

The golden striped Japan Spindle-tree, *Euonymus Japonicus aureus variegatus*, is a low-growing evergreen shrub, which will do well in warm localities, but will not stand the north of England, without being taken up for the winter. The ovate leaves are a gay mixture of green and bright yellow. It requires a sandy loam and a dry subsoil, and it may be increased by layers and cuttings, choosing for the purpose the shoots which are the most handsomely variegated. June is the time for layering it: bend the shoot down with great care, make a slit on the under side, peg it down, and cover it with an inch in thickness of sandy soil. In the autumn of the following year it may be parted from the old plant, potted, and kept in the house, but in a cool situation, until the next spring, when it may be planted out. Cuttings may be taken in March, and plunged in gentle heat for striking.

The variegated Yucca is a very handsome variety, its long leaves being gaily striped with yellow and two shades of green, and tinged with pink at the base, with curious thready appendages hanging from the sides. It must be planted in an open space, not crowded among shrubs, nor subject to the drip of trees. It wants a good loamy soil, mixed with well rotted cow-dung, and is propagated by offsets from old plants.

The golden variegated Thorn, *Cratægus prunifolia variegata*, is a low bushy thornless tree, with handsome foliage, beautifully, richly, and constantly variegated. It is perfectly hardy, requires only a common soil, not too rich, as manure makes the leaves run to green. It wants full exposure to the sunlight to bring out its beautiful colours. To propagate it, bud in June on the common thorn, taking the buds from the most variegated branches. It may be grafted in the same way in March. As soon as the buds or grafts have grown rub off all other shoots, giving the variegated kind the full strength of the plant.

The *Funkia Sieboldiana* is a beautiful perennial, with large handsome foliage, variegated white and green, producing a rather pretty lilac flower in summer. It must have a deep sandy loam, and a warm dry situation. It should be potted into a large pot, and put in a cold pit in winter, brought forward in a greenhouse, and afterwards planted out. It must not be allowed to suffer from want of water. It is easily propagated by division of the root in autumn.

The *Farfugium grande* is a splendid plant, with bold magnificent showy foliage, gaily and thickly blotched and spotted with yellow on a dark green ground. As it will stand the winter (losing its leaves) in the south of England, it is quite worth while to attempt to acclimatize it more completely. The best soil for it is strong fibry loam, sandy peat, and leaf-mould in equal parts. It must be new potted in March, and again in August; and if it be tried in the open ground the pot should be sunk in a warm sheltered border, after the warm weather begins, and taken up before winter. The old plants send up suckers, which may be taken off with roots, potted singly, kept under a glass, shaded for a few days, and then hardened and placed in the greenhouse.

Some of the new Begonias might be made as hardy with us as our old ruby-leaved favourite, by trying to acclimatize them by careful gradation. They have lived near London through severe winters, in a room in which a fire was kept up by day, but not by night. The begonias grow in light rich sandy soil; cocoa-nut fibre is good manure for them.

The *Perilla Nankinensis* is most valuable, either as a bedding plant or to mix with other flowers in the borders, on account of its deep crimson foliage, almost amounting to black. It must be sown in heat in March or April, and planted out in May.

Cineraria maritima mixes in good contrast with the perilla, and other plants of deep-coloured foliage, being clothed on leaves and stalks with silvery down. This is propagated by cuttings and offsets, in a hot-bed, and requires a warm soil and situation.

The Holy Thistle is beautiful in its white and pale green foliage, but if it is introduced care must be taken that it does not become a weed in the garden.

To enter into the cultivation of many of the handsome foliaged trees, shrubs, and plants that may be used to vary most beautifully the general appearance and colouring of the flower garden, would take too much space, but I may just cursorily name a few of each which are well worth attention. Among trees we have the variegated maple, striped-leaved horse-chestnut; variegated leaved chestnut; several oaks with variegated foliage; the golden-twigged lime; the copper beech, and others. As shrubs there are the never-failing aucuba, that host in itself; the variegated syringa (*Philadelphus coronarius foliis variegatis*); the golden-edged leaved buckthorn; the variegated rhododendron (*Rhododendron ponticum variegatum*); the variegated yews; and the variegated arbor vitæ. As plants we have the variegated periwinkle; the variegated germander; the variegated sedum; the variegated blue Jacob's ladder; the *Ænothera glauca variegata*; the variegated balm and mint; the variegated toad-flax (a pretty ground creeper); the variegated white lily; the variegated German iris; the variegated hairy willow herb; the variegated daisy; the greater variegated astrantia; the variegated shiny Arabis, and the variegated blue agathæa.

There are also ribbon grass, Belgian daisies, variegated Arabis, *Centaurea dealbata*, *Centaurea cruenta*, the tri-coloured salvia, and various bedding plants with deep crimson and glaucous leaves. There is, in fact, so much variety in foliage, natural or obtained by cultivation, that by its judicious utilization we may permanently aid the varying beauty of floral arrangement.

I have endeavoured to confine my list in this chapter entirely to hardy handsome foliaged trees, shrubs, and plants, deferring to another those splendid plants which require the aid of the greenhouse, but some of which I hope to see more hardily domesticated among us at a future time.

There are some herbaceous plants of gigantic growth

and foliage of magnificent size which may be advantageously introduced in any rough ground which it is desirable to ornament without much loss of time. The *Heracleum giganteum* and *Heracleum asperum* are biennials of such rapid growth, that they have been known to attain a height of 12 or 14 feet in one year. The stem is fluted, the leaves of enormous size, and the compound umbels of white flowers large in proportion. It is their size, and the boldness of their foliage and growth, which render them so handsome to fill a place where a large object is required. They are raised from seed, which ripens in abundance, and they do well in a moist situation, near a pond, as they require a great quantity of water.

The Tree Mallow (*Lavatera arborea*) is another biennial of grand proportions, although not so large as the heracleum; it is a splendid and very ornamental plant where one is wanted of bold rampant growth.

The Henbane, *Hyoscyamus*, is also handsome when it is planted out so as to stand alone.

CHAPTER VII.

TENDER HANDSOME FOLIAGE PLANTS.

Now that plants which take their beauty from their splendid and gaily variegated foliage are so popular that they form a main feature at the shows, and have become especial horticultural favourites with all who can by any means compass the cultivation of a few of them, it will not do to pass over even the tenderer varieties without casual mention. To cultivate largely the splendid-leaved plants introduced within the present century, many of them quite recently, requires the aid of stove or greenhouse; but persons who have an extensive flower garden, and who can aid their efforts to supply it with those

convenient and valuable appliances, can enhance its beauty and the gaiety of its appearance by keeping such of these *recherché* plants as space and the heat they can keep up will enable them to manage. A great number of them require a summer heat of from 65° to 80°, or even 90°, and winter heat 55° to 70°, or 75°.

The *Calathea zebrina*, *Maranta zebrina*, or Zebra Plant of Brazil, with its magnificent stout velvet-like leaves, two feet long and six inches wide, beautifully streaked from the midrib to the margin, is a leading favourite among handsome foliage plants. The flower springs from the root in a spike, and is a rich purple, shaded with red and white. Of similar kind, and similar also in richness of colour, are the *Maranta vittata* and *Maranta alba lineata*, both having leaves handsomely streaked with white on green. The *Maranta fasciata* has a broader leaf with a bolder stripe; in *Maranta regalis* the leaves are striped with bright red lines on the surface, and they have a red tinge beneath. *Maranta Porteana* has smooth shining oblong sharp-pointed leaves, striped with white on the upper surface, and tinged with purple beneath. The *Maranta pardina* has splendid pale green leaves, from ten to fifteen inches long, and from four to six inches wide, with numerous dark square streaky markings; it has a pretty yellow flower, the most showy of any of the tribe. The *Maranta micans* is the smallest of any; and is, when well grown, a sweet little gem. The leaves are dark green, with an elegant feathery glossy stripe down the centre of each. The plant should be placed near the glass, but shaded from the sun. The *Maranta Warsewiczii* is a strong evergreen, as handsome, showy, and as easy to grow as *Maranta zebrina*. Its noble leaves are two feet long and six inches wide, on a stem a foot high; they are a rich dark green, with a feathery pattern of pale green running up the centre.

These beautiful plants require a temperature of from 60° to 80° in summer, and from 50° to 65° in winter, some requiring rather more heat than others. They may be grown in a compost of fibry loam, sandy pease silver sand, a little well decomposed cow manure,,

and small pieces of charcoal. The pot should be well drained, and its size be in proportion to the size of the plant; stagnant water is injurious to the root. Water moderately in summer, and in winter very moderately, and keep the plants rather in shade to retain the beautiful marking. They may be repotted in spring, if they are in a healthy growing state, and a little bottom heat will then do good. Sometimes, when plants are growing vigorously, and if it is wished to have them large, there may be another potting in June. Keep the air of the house moist during the growing season, and let the plants rest from December to March. They may be increased by division of the root, and by the careful removal of side shoots. Shade the little plants from the sun for a month, after which they may be treated like the old plants.

The splendid two-coloured *Caladium*, *Caladium bicolor splendens*, is a magnificent foliaged plant, which dies down in the autumn. The leaves are about nine inches long and seven wide, the centre is of the brightest red, with glossy metallic lustre, and the margin dark green, each leaf rising on a tall footstalk from the root of the plant. The flowers are white. The *Caladium Chantini* is a yet handsomer plant, its broad arrowhead-shaped leaves being larger, crimson in the centre, shaded to pale green towards the margin, and covered with a profusion of white spots of irregular shape and size. These beautiful leaves are on stems two feet high, with streaks of dark purple and crimson. *Caladium argyrites* is a smaller but no less beautiful plant. It is quite a gem, its arrowhead leaves being a dark green, irregularly but prettily marked with white, the plant not exceeding nine inches in height. *Caladium pictum* has wide leaves, about a foot long, irregularly blotched with white on a pale green ground, rising on stems of a rich purple colour. With a little care in watering, it will retain its leaves all the year. The *Caladium Verschaffelti* is a remarkably showy plant, the leaves six to nine inches long, of a brilliant green, with irregular bright red spots.

All these caladiums are so bright and beautiful, and

so showy in colour and growth, that they deserve a place in every collection of handsome foliage plants. They require a summer heat of 70° to 80° : the first-named variety may have a winter temperature of 55° to 60° , the others 60° to 70° . There is one kind, the *Caladium Virginicum*, which is hardy. The ginger-like roots of *Caladium bicolor* are eaten in tropical countries, under the name of cocoa roots.

They are tuberous-rooted plants, and are increased by division of the roots. They will send out side shoots, and these when rooted may be taken off, potted, and placed in a frame or under a hand glass, with a gentle bottom heat, keeping them shaded.

Their soil is turfy loam, sandy peat, and thoroughly well rotted cow manure, in equal parts; add silver sand, and a few bits of charcoal mixed in amongst it. The tubers should have some rest in winter, being at that time kept rather dry. As soon as the plants begin to grow in the spring, shake them clear of the old soil, and re-pot them in fresh compost, mixed as mentioned above. Give but little water until they have made a good start, and then re-pot them; give a little bottom heat, and increase the heat and moisture in the place where they are kept. If the plants grow fast, they will require to be re-potted in June; give plenty of water, and now and then a little liquid manure. Watch for the green fly, and if it should appear, wage war against it at once. At the spring potting, if mouldy or decayed spots are seen on the tubers, clean them by scraping, and dust a little powdered chalk on the wound. *Caladium Chantini* must be kept dryer than the rest, and its offsets may be planted in almost pure sand.

The Begonias recently introduced are plants of magnificent foliage, and are delicately pretty, although not very showy in the flower. The peculiar shape of the leaves, one side being so much larger than the other, and their brilliant mixture of colour, render these plants very attractive. The *Begonia rex* is splendid, and many handsome seedlings have been raised from it. They require about the same range of temperature as the caladiums,

a moist atmosphere, and for soil a compost of sandy turfy loam, sandy fibrous peat, and decayed leaves. To make the variegation clear, the plants should be kept to a small pot, in proportion to their size. They are curious in being propagated by the leaf. The ribs of the leaf may be cut into divisions, laid flat on the surface of a pot of sand, and pegged down with little hooked sticks. The pot is placed in heat, covered with a bell glass and shaded, the air within being kept rather moist. In a short time roots will spring from the base of each division, and young leaves will appear, forming a new plant, which may be taken up and potted. It should be returned to close moist heat until it takes to growing, when it may be gradually introduced to light and air.

Dracæna ferrea versicolor, or various-coloured terminal Dragon-tree, is an evergreen of splendid growth, requiring a temperature of 70° to 80° in summer and 50° to 60° in winter. It grows from ten to fifteen feet high, with leaves a foot long, brilliantly tinted with rich dark green, and shades of scarlet and crimson. *Dracæna ferrea* is of similar growth, but with foliage of a rich dark shade of crimson; very beautiful, and making a fine contrast with foliage of any lighter colour.

These fine plants are not difficult to increase. Cut the naked stem of a tall plant into pieces two inches long, and bury them entirely in sandy soil, with half an inch of sand over the tops. Plunge the pot in a strong bottom heat, give but little water, and most likely every piece will grow. When they are potted off, let the young roots be carefully preserved, place them under a hand glass until they begin to grow, then harden them gradually, and re-pot them as they require it. The top may be used as a cutting, in sand, with bottom heat, under a bell glass, and will make a fine plant sooner than the bits. Mature plants should be stopped in the leading shoot to make them spread. The soil should be a compost of loam, peat, and leaf-mould.

There are several plants of the Croton tribe which are beautifully variegated in foliage. *Croton variegata* is an evergreen shrub, growing from eight to ten feet high,

and requiring summer heat of 65° to 75° , and winter warmth of 55° to 60° . The leaves are handsome, being about six inches long, and an inch and a half wide in the centre, and thickly variegated, striped and mottled with yellow on a green ground. The flowers are white and green. *Croton pictum* is an evergreen of similar habit. The leaves are rather wider, and curiously spotted with shades of red and yellow.

Croton variegatum angustifolium has long narrow leaves, beautifully streaked with yellow on dark green, gracefully drooping downwards. Its flowers are not conspicuous.

Croton tiglium produces the well-known croton oil.

The soil they like is loam and peat, with silver sand: stimulants spoil the variegation. Increase the plants of *angustifolium* by cuttings taken about the end of July, just as the summer shoots begin to harden. Take them off, where the new and the last year's wood join, smoothly with a sharp knife: trim off the lower leaves, and the ends of those which are left. Plant the cuttings in a pot of compost, with an inch in depth of silver sand above: water them to set the sand close about them, and cover them with a bell glass, taking care that no leaves touch it. Plunge the pot in heat, shelter it from the sun, and water when necessary. Pot the cuttings when they are well rooted, but return them to their old position until they grow again. After that harden them to bear full light. Cuttings of the other kinds should be taken in March or April, and the leaves left entire. Let the plants have pots which are no larger than they require; and as their habit is rather straggling, stop the leading shoots annually, and train out the side branches.

The *Pavetta Borbonica* is a pretty growing plant, with leaves about nine inches long, beautifully spotted with white and pale green on dark green, with a bright red vein down the centre. It is of vigorous habit, and requires stopping to make it grow bushy. It grows in fibry loam and sandy peat, without stimulating manures, and requires re-potting when the old pot is filled with roots. It grows from cuttings taken in spring, and

planted in sand, under a high bell glass, in bottom heat, shaded from the sun. The mature plants love plenty of light and air.

The *Cyanophyllum magnificum* is a woody shrub of fine growth, with truly magnificent leaves, about two feet long and nine inches wide, of a handsome oval shape, tapering to a point. The veins of the leaves are stout, and raised in a regular pattern of white on a rich velvety green surface, and the under sides are a full purplish crimson. The temperature in summer is 70° to 75° and in winter 65° to 70° . The soil for it is well mixed peat, decayed leaves and silver sand. Let the pots be well drained; water sparingly in winter, well in summer; and let the plant have full exposure to the sun. If it is inclined to run up, stop it, to make it shoot from the sides. It may be grown from cuttings.

The *Cissus discolor* is a splendid climber, with heart-shaped pointed leaves, six inches long and two and a half broad, beautifully variegated on the upper surface; rich green, clouded and marked with white, peach, and purplish crimson, and covered with metallic lustre; while underneath they are dark crimson. The veins of the leaf and the tendrils of the plant are crimson. Its summer temperature is 70° to 75° , and winter 60° to 65° . It will do well in a compost of peat and loam, mixed with well rotted manure. It is a rapid grower and requires a rich soil, and it will do nicely to cover a wall in a conservatory, to train up pillars or over a balloon trellis. It should be shaded from hot sun, which destroys its metallic lustre, and the leaves must not be watered. It will grow from cuttings of top shoots. *Cissus porphyrophyllus* is also a very handsome climber, but of slower growth.

Sonerila Margaritacea is a half-shrubby, low-growing plant, which is a perfect gem of beauty, with numerous shoots and small leaves, marked all over the upper surface with round silvery spots of great beauty and distinctness, and pretty rose-coloured flowers. Its summer temperature is 70° to 80° , and winter 60° to 65° . Re-pot the plants in spring, and again in June,

During the growing season they must have a moderate supply of water, but plenty of moisture in the air; in winter they should be put as much to the sun as possible, turning them often that every leaf may get its share of light. They bloom so abundantly that it is advisable when the flowering is half over to cut off the flowers, buds and all. In hot days they should be kept in a shady part of the house. They are propagated by small cuttings in spring, in sand, with heat, under a bell glass. The glass should be often wiped and shaded.

The *Alocasia metallica* is one of the most splendid of the handsome foliaged plants. It is of the Arum family, and throws up its magnificent leaves, from sixteen to twenty inches long, and wide in proportion, from the root. The diversity of its colours, aided by a brilliant gloss, is too variable to describe, and in sunshine produces a positively gorgeous effect. It is a native of Borneo. It should be grown in a compost of rough fibrous peat, mixed with a little well decayed leaf-mould, and a large proportion of silver sand. The pot must be well drained, to avoid stagnant water round the root, but the plant requires plentiful watering and a moist atmosphere. It is propagated by parting the root, but it makes its offsets freely. The young plants, after they are divided, should be covered with a glass, and the pots plunged in a bottom heat of 83° or 85°.

The *Hydrangea Japonica variegata* is a handsome foliaged hydrangea, requiring no higher a temperature than 55° to 60° in summer, and 45° to 50° in winter. Hydrangeas generally like rich earth, but the variegated sort must be kept in poor soil, or the variegation will disappear. They like a good deal of water, and are propagated by cuttings taken in May.

There are many more splendid plants which I should like to add to this list, but I find it already almost too long, and including quite choice enough for persons who like to try a few. One, however, familiar to those who visit Covent Garden Market, must not be omitted. The *Poinsettia pulcherrima* is famous for its handsome scarlet bracts, which are brilliant enough to exceed flowers in

gaiety. It requires summer temperature 60° to 70° , and winter 50° to 55° ; likes rich earth, and is propagated by cuttings, laid up a few days to dry before being planted. When the plant has done flowering, it should be cut down to within six inches of the pot, and kept in a cool dry situation for two months, and then treated with re-potting and more warmth. As the plant grows, give more water.

CHAPTER VIII.

ROSES: GROWTH AND PROPAGATION.

FIRST among flowers in beauty and sweetness, general favourite all over the world, without which no flower garden can seem bright, the rose, with all its other merits, has that also of universal utility; for there is scarcely a garden with situation so unfavourable that roses of some kind cannot be found to prosper there, to lend fragrance and beauty, where both, from being so much needed, are sure to be most thoroughly valued.

There are very few roses that will do in the immediate neighbourhood of large towns, but there are a few, among which the old cabbage rose stands supreme, alike for beauty and fragrance. That pretty old sort, the delicate maiden-blush, too, will do; true, she often does not open very kindly, and sometimes treats her protectors to an objectionable green centre; but there are few flowers than which even a poor rose is not better, and this blooms so abundantly that it can afford to have some imperfect blossoms. The common white rose does well and flowers abundantly in gardens which are troubled with smoke. The old-fashioned damask rose, although deficient in the number of its fine large petals, and showing an objectionable yellow centre, when fully open,

is sweet, large in size, brilliant in colour, and free in growth. The York and Lancaster rose, with its striped petals, is much like it; and the early crimson and the common moss roses often do very well. Some rose-growers give a long list of choice roses for planting near towns, but in my own experience, I have found the purchase of such for gardens very close to London, or in any smoke-laden locality, lead to disappointment. The five mentioned above, and roses of similar habit and hardihood, will give a fair variety of colour, and abundant sweetness, in any small garden within three miles of the City. In choosing roses for such situations, freedom of growth must be considered, as well as hardiness; and bushes or any trees on their own roots are better than worked plants, as being less likely to be lost from accidents. The syringe in summer must be used often, as roses cannot do well if the foliage is dirty. Under unfavourable circumstances it is of no use to attempt too much; but if a garden at Islington, or thereabouts as regards distance from smoke-creating towns, can be made gay in summer with fine cabbage and other common roses, and white lilies, preceded by bulbs, daisies, and primroses, and followed by dahlias and chrysanthemums, the owner will have little cause to complain.

Getting farther from the smoke, that chief among the rose's enemies, we may have an endless variety of perpetual, hybrid perpetual, Bourbon, tea-scented China, Noisette, and China roses, and need only shut out from our collections those which are very tender or very touchy. In such localities the list of kinds which will not do is more easy to give than that of the choice kinds which will thrive.

All roses are included in the two great divisions—summer-blooming and perpetuals. Summerroses mature their buds and bloom, and then their flowering is over until the next year; perpetuals begin to bloom early or rather late, according to the character of each, and produce buds and flowers in continued succession until stopped by winter cold.

Rose-trees are grown in various forms. Standard

roses have the stem, without shoots, from four to five feet high, and the head of leaves and flowers at the top. Half-standards are of the same form, but the stems are from two to two and a half feet high. Dwarf standards have the stems a foot or a foot and a quarter in height. Rose-bushes are allowed to grow thick and bushy quite from the ground. Weeping roses are roses of rampant growth, budded on tall dog-rose stems, and trained or allowed to fall over. They are very beautiful, but do not do well in a situation exposed to wind. Pillar roses are grown tall, and trained up a stake ten or twelve feet high : roses for this must be of a vigorous habit of growth. Besides these, there are climbing roses for training, and dwarf roses for bedding.

Roses are either grown on their own roots, or budded or grafted on wild rose or other stalks.

Rose-trees on their own roots may be made by division of the root, by layers, by cuttings, or by suckers.

Layering, or laying down a branch under the soil to take root without severing it from the parent plant, should be done in summer or autumn. If the work be omitted at these times, it may be done in the following spring, to save more loss of time ; but July is best. When the shoots of the year's growth are eighteen inches or two feet long, which should be about the middle of July, take off the leaves from the base of the shoot to be layered two-thirds of its length, with a very sharp knife. Then carefully bend it down to try the best spot for fixing it, and there dig a hole, measuring four or five inches every way, and fill it with compost. The shoot must then be tongued (*i. e.* an incision made in it, cutting upwards about half way through, just below a bud), and gently twisted so that the cut may remain open. The tongued part must be set in the middle of the compost, fixed in its place with a peg, and covered to the depth of three or four inches. The tongue should be made on the shoot above where the bow will come, so that it may not be more than two inches under the earth. A large stone may be placed on the surface of the ground to fix the layer. The compost should be rotten manure and pit

sand in equal parts, well mixed. In November the layers may be taken up if they have rooted; if not, they may be removed the following spring, or may be left longer. If the shoots are not long enough in July or August, the layering may be done in October, or even in February and March. The plants intended for layers should be cut down very low the year before, that they may make long shoots by the time they are wanted. Layering will do well with all free growing roses, but it is most needed for sorts which do not grow well from cuttings, such as the old and other moss-roses, and Provence and Austrian roses.

The most satisfactory of all methods of increasing rose-trees is by cuttings. Roses on their own roots are like a house founded on a rock: contingencies which destroy choice roses on others' roots leave them comparatively unharmed. Within the last few years we had a winter (every rose amateur will remember it) which destroyed roses to such an extent, in killing down the tops, that it raised the price of rose-trees 200 per cent. That year we did not lose one, because ours were on their own roots, and those which were cut back to the root put out again. An intensely severe winter has comparatively little mischievous influence over roses on their own roots. Violent wind may destroy a budded standard, but in the case of one on its own root you always have the root left, to put out again, and to produce its own kind still. On account of the stability of a rose on its own root I especially recommend amateurs to increase all roses which can be so grown by cuttings—and non-amateurs too, for the matter of that; for certainly the tree least subject to contingencies ought to have the highest money value. It requires time and care to make tall standards from cuttings, but it may be done, and when it is, successfully, the time and care are well paid for. A rose which has not stability of character to take to its own root must be satisfied to use the root of another: and roses differ as much in character as men and women; but I shall try to name the best sorts which will grow well from cuttings.

Most hardy roses—hybrid perpetuals, Bourbons, and tea-roses may be increased by cuttings, whenever good cuttings present themselves, and that is during the whole of the flowering season. Whenever the roses die off on a fine healthy shoot, cut the shoot with a spur of the old wood to form a heel. Fill five or six inch pots with a compost of friable loam, leaf-mould, and sand, press it pretty firm, and plant the cuttings so as not to touch each other; having previously trimmed them, by removing all the leaves from the part which is to go into the earth, and all but one or two from the upper part. Water them with a fine rose, and place the pots in a frame with a gentle bottom heat; shut up close, and shade from the sun. As time goes on, water only when necessary with a very fine rose on the watering-pot. When they have rooted they may be potted singly, and again placed in a frame with a gentle bottom heat, where they should be shaded and watered for nine days or a fortnight. As the root gains growth they may be hardened, previous to planting out.

There are many quite first-rate sorts which may be grown from cuttings, planted under a handglass on a north border in summer. Dig out a space a foot and a half deep, and rather larger than the handglass; put in crocks for draining to the depth of half a foot, half a foot of manure, and fill it with good compost, as named above. Cut and plant the cuttings in the same way, never removing the glass except for necessary watering. In this way I have known the following good useful roses do well, and make handsome bushes, and, with necessary training, standards:—General Jacqueminot, Géant des Batailles, Souvenir de la Malmaison, Gloire de Dijon, Safranot, Aimée Vibert, Marquise Boccella, William Jesse, Reine d'Angleterre, Jules Margottin, Thé Aurore, Jaune Desprez, Madame Plantier, Pierre de St. Cyr, La Reine, Sénateur Vaisse, Comte de Nanteuil, William Griffith, Ophirie, Smith's Yellow, Mrs. Bosanquet, Napoleon, and many others of similar habits—not a bad collection for a plain garden of modest pretensions.

It is a good plan, in planting the cutting, to make a hole, put in the cutting, fill up the hole with silver sand, water, and press the earth tight. Cuttings may be made in spring, summer, or autumn, but we have found no time so good as June and July, although in favourable seasons they have done well as late as Michaelmas. There is another way of planting cuttings, which we have found very successful. Get a three-inch pot, stop the bottom hole with a cork, *fill it with water*, place it inside a six-inch pot, with the tops of the two even, and fill up the outside pot with compost. Plant rose cuttings round, close against the pot of water, and keep the whole close covered with a glass, until they strike, which is often in about two months.

To get cuttings ready early in the year, so that the young trees may be ready to plant out early in summer, strong rose-trees in pots may be forced in December, placing them in a sunny situation to ripen the shoots.

Propagating by suckers is not often practised, but it is useful in the case of Scotch and Austrian roses.

Roses on stocks are produced by budding and grafting, and for this kind of propagation the first step is to procure stocks, which should be planted in November, to be ready for working, *i.e.* budding or grafting, the following year. The stocks generally used are from the dog-rose, the common wild rose of England, suckers of which can be taken out of hedges, or tall stems of which can be grown, as cuttings, planted deep. They are fittest for standards, as the stems grow more kindly than those of stocks of a more aristocratic descent. Manetti and Céline stocks are the result of seedlings from cultivated roses. The black Boursault is another having similar origin. They are kept for dwarfs. When the stocks are planted in autumn, the roots should be pruned close, and the stems shortened to the height required: for standards three or four feet; for half standards two or three feet; for dwarf standards one foot—a little more or less; and for rose-bushes to within a few inches of the ground. The stocks should be planted in rows three feet apart, and it will do good to throw some litter round

their roots. The Manetti sprang from the hybrid China: it was introduced by Mr. Rivers, about thirty years ago, from Como, and Mr. Cranston, the rose grower, appreciates it so highly that he rears over 50,000 a year. The Céline stock is a variety of the hybrid Bourbon; it is robust in habit, and is especially good for Noisettes and Bourbons. That touchy rose, the Cloth of Gold, does better on it than on any other stock.

Budding has the advantage of giving the vigour of the stock to a kind of poorer growth. The season for budding is from early in June to late in August; *i.e.* whenever the scion and the stock are both in a good state, from having the sap flowing freely; otherwise the bud will not be ripe, and the bark on the stock will not rise freely. Buds should be taken from ripe shoots of the current year, and may generally be got when the tree is in flower. Budding should be done quickly and dexterously, to leave no time for either the bud or the incision in the stock to dry; damp cloudy mild weather should be chosen, and the best time is early in the morning or after the heat of the day is past. Where the rose-leaf joins the stem a little bud will generally be found; one which is plump and healthy must be chosen. With the sharp budding-knife pare off the bud, with a portion of the bark in the form of a shield, leaving on a portion only of the leaf-stalk, by which to hold it, and from behind the shield of bark remove what woody fibre there may be, leaving the root of the bud full, plump, and undisturbed. A plumpness of the bud should be seen inside the bark. In the bark of the stock to be budded make a horizontal cut, through the bark only, and from the centre of that a perpendicular cut downwards. If the stock is in a good state for budding, the angles in this T-shaped cut may be readily raised with the budding-knife. Insert the bud by pushing its little shield of bark under the bark of the stock, from the cross cut downwards, and when it is pressed in far enough cut off the upper end of the shield at the cross cut. Secure the bud in its place by tying it round with soft cotton twist, worsted, or bast, and the place may be covered with a coating of cow-

dung and clay, or left with only the ligature. A laurel leaf fastened at each end by a ligature round the stock, so as to arch over the bud, will defend it from the sun's rays, air, and wet, any of which might interfere with its growth. The tie which keeps the bud in place must be watched and loosened when necessary, which will generally be in about three weeks, and removed a few weeks later. A few inches should be taken off the briar which has been budded, to make the sap flow more to the bud. The Manetti stock may be budded later in the season than the dog-rose. After the budding, about the month of November, not sooner, all the branches not budded must be cut from the stock; they may then remain until May, when they must be watched, and have all the wild buds rubbed off as they appear, leaving, however, two or three shoots above the bud to draw up the sap, only nipping off their ends from time to time until June, when they, too, may be cut off.

Grafting roses is much less frequently resorted to than propagating them by other means. Spring is the time for it. The stock to be grafted should be forwarder than the scion, and operated on when the sap is in activity. Whip, cleft, and saddle grafting may any of them be used. Grafting is, however, more fitted for in-door than for out-door cultivation.

It is not difficult to raise roses from seed, as some kinds seed abundantly; but careful hybridizing or crossing is too troublesome for the general amateur. The sorts for crossing should be judiciously chosen. Upon a fine dry day, when the flower is fully expanded, the anthers must be cut away with a pair of scissors, to prevent the seed following that parent only; then the pollen from the other plant must be placed on the pistil with great care, at a time of day when the farina is abundant, and the flower so impregnated tied in a gauze bag to prevent interference from insects, and the two kinds marked and noted down. An easier plan is to plant dissimilar varieties side by side, and leave the bees to hybridize the seed, and this might prove interesting even to amateur rose-growers.

Let the seed-pods ripen thoroughly on the tree, and when they are gathered put them away in small pots of dry sand until February; then rub out the seed, sow it in light rich earth mixed with sand, with an inch thickness of the earth over it, and place the pots or pans in a frame, in a shady sheltered spot, taking care that the temperature and moisture are kept uniform. The seedlings may spring up in April or May, and they may not make their appearance until the following year. When the little plants are strong enough, remove them, with care not to disturb the seed left behind, and keep them shaded and watered occasionally. Or, if not too thick, they may remain where they spring up until they grow a good size. They will sometimes flower the first year, and so show the colour, but the quality of the rose will not be seen until the plant has been established at least two years. Single or very poor flowers may be discarded at once; but any which show good form, distinct colour, petals of good substance, and rather full flowers, will be worth watching.

CHAPTER IX.

ROSES: THEIR CULTURE.

ANY deep soil, with a cool subsoil, suits roses on the dog-rose stock, but a deep stiff loam is best for them. The black porous soil sometimes met with in gardens is bad for them, and must be improved by a mixture of stiff loam. Sharp gravelly and light sandy soils are also bad. Rich peat land is not bad, nor bog earth, if it be thoroughly drained. The soil of all others is a deep, rich, rather retentive, somewhat greasy loam, well drained. Roses on their own roots, or on the Manetti

stock, do not require such a stiff soil as those on the dog-rose, but all light soils for roses will be benefited by a good allowance of surface manure. In making beds for tea-scented and China roses on their own roots, dig out the earth to a good depth, and lay in a layer six or eight inches deep of draining material, and then fill in the earth, lightening stiff loam with sand and an abundant supply of leaf-mould and well rotted manure. Where roses are planted on a lawn, a circle of earth should be cleared round them to make beds for them.

Roses on briar or other stocks may be planted in November or December; but if the ground be wet, or not in good condition, then the planting may be delayed until February or early in March. Tea-scented and other tender kinds may be planted out in the end of March; and tea-scented, China, hybrid perpetual, and Bourbons, on their own roots, not before April.

Those who buy rose-trees should bespeak them, or select and mark them early in autumn, to prevent the disappointment arising from buying after the nursery stock has been picked over. If they are received before the best time for planting, shorten the long fibrous roots, and never let the roots get dry, but put them in earth directly; lay them in by the heels, as gardeners call it. Tea and tender Noisettes can be put in under a wall, where they can be sheltered with mats, or somehow protected from frost, until they may be finally planted. Choose a fine day for planting, when the earth is moist, but not wet enough to stick to the spade or shoe. Good compost is, for light soils, well rotted cow manure and rich stiff loam from an old pasture; and for stiff land the manure, with sand or burnt earth, allowing a barrowful each to large trees and half that quantity to small ones. Dig the hole for the root quite large enough, spread the roots evenly to their full extent, level the earth and shake it in about the roots, holding the plant the while, that it may not sink too deep, and tread in the earth. Care must be taken not to plant dog-rose stocks too deep. Manetti stocks, on the contrary, are worked quite low down, to allow of their being planted so that

the union of the bud or graft with the stock may be under the surface of the ground. Tall roses should be pruned, to prevent the wind tearing them, and they should have stakes. Standards should be planted three feet apart, and rose-bushes from twenty-one inches to two feet.

Pig manure is the best animal manure for roses. Next night-soil, cow manure, and horse manure; the sweepings of poultry and pigeon-houses are also good. They should lie in a heap long enough to be thoroughly rotten, but not long enough to lose the ammonia. Pig dung should be spread and forked in at once early in spring. Night-soil should be mixed with sand, charcoal dust, or some such dry substance, and spread and dug in in winter. A surface dressing of rotted manure should be applied in autumn, allowing two shovelfuls to each standard or other tall tree. For summer surface dressing, wood ashes, with an eighth of guano, is good, a quarter of a peck to each tree, spread over a circle three feet in diameter; this dressing should have abundant watering in dry weather. Brewers' grains, thrown to ferment for not less than three weeks, and mixed with one-fourth of burnt earth, is a powerful stimulant; give half a peck or a peck to each tree in winter. The following manures have also been recommended:—Soot, wood ashes and charcoal (especially for tea-scented and others on their own roots), bone dust, and bones in half-inch bits (lasting, and especially good for tea and other roses on their own roots); guano and super-phosphate are good, but they must be used with caution, or they may sacrifice bloom to rampant growth. They are best applied in liquid manure, and in that form they suit light soil well. Liquid manure of all kinds should be applied while the trees are freely making their growth, and again to perpetuals when the first bloom dies off. Every rose-grower should establish a vessel for liquid manure, large in proportion to the number of roses under cultivation: it may be half filled with manure balls from well-fed horses or sitting hens, or with any rich manure, and filled up with water again and again for some time. This may be used freely with any roses

which are in a thoroughly healthy state, and making good growth, but very cautiously with any which look a little sickly. If a rose is exhausting itself with abundant flowering, it may have liquid manure almost without stint.

In the spring the earth round every rose should be stirred to the depth of one or two inches, and again whenever the surface gets hard, taking great care later in the season not to disturb the roots. In forking, many gardeners are apt to be very careless of the roots of trees and plants, and want watching in this particular.

To keep the growth of roses within bounds and in good shape, disbudding, or rubbing off all the buds likely to produce shoots where they are not wanted, or where they will be too crowded, prevents much after trouble in pruning. After the buds are fairly started, look over the tree with eye "on the visioned future bent," and rub off or cut out all that are likely to shoot in a wrong direction, and thin out wherever the shoots threaten to become too crowded. This will not only improve the growth but it will strengthen it.

Pruning is chiefly done in the spring. Trees may be cut back to four or six eyes the first year after budding, as soon as the sap rises and the buds are observed to swell. If they are planted out in the autumn of their first year they may need a little shortening then, to prevent the wind having too much power over them, but they should not be pruned closely when newly planted.

When the established trees are pruned, the pruning must be done with reference to the growing shoots forming a good and not too crowded head or bush. To ensure uniformity of growth on all sides of the tree, all the shoots left should be of about equal size, and any of rampant growth had better be shortened, and their lateral shoots stopped as often as necessary. In shortening shoots, cut close to an eye, leaving, as far as practicable, stout plump buds, because they are likely to produce flowers; and spare also those that turn the right way, to give the tree a handsome shape.

French, moss, alba, Provence, damask, and Austrian roses require close pruning; that is, the wood of the year before is cut back to within an inch or two of the two years old wood, leaving on these shoots only two or three eyes, which will throw out as many shoots, with bloom. To make the plant conical, prune the centre shoots closer than the outer and lower ones; they will then grow in advance of the sides, and thus make the plant pyramidal in shape. The vigorous growers may have more moderate pruning: for the strong shoots six inches, the weaker ones four.

Hybrid China and hybrid Bourbons require care in pruning, as with them pruning their long rampant shoots may spoil the flowering. These rampant growers may be thinned out; the strong shoots should be left two feet or more in length, and the weaker one foot or eighteen inches. With some kinds it is necessary to leave the strong shoots their full length, while with those of moderate growth the sprays may be about six inches or a foot. These vigorous growers will often decline after a few years; when they do so it will be advisable to prune closer. It may be well even to prune quite close, and force the tree to make new wood and a better form. In a healthy tree cut back, new eyes will form, even in quite old wood.

Austrian briars require different pruning from any other roses. The *Harrisonii* must only be thinned out, and their sprays just tipped. The Persian yellow must be pruned in quite close every alternate year, to keep it from exhausting itself.

Hybrid perpetuals, damask perpetuals, perpetual moss and Bourbon roses should be pruned some time in March. These roses are very numerous, and present wide differences in habit. Those of a dwarf and moderate growth may be pruned down to two or three eyes, and all weak and crowded shoots removed. Those of more robust growth may be thinned out the same: the strong shoots may be cut to six or eight inches long, and the smaller ones to four or five.

The tea-scented, Noisette, and China roses may be

attended to, with the knife, at the end of March or beginning of April, and they do not generally require close pruning. Especially with the tea-scented and China roses, only thin out small weak wood, and shorten the sprays a little. In the vigorous growing Noisettes the shoots should be left long. That fine yellow rose, the Cloth of Gold, is worthy of great care on account of its beauty, but it is a shy bloomer. It must have a place against a south wall, be well manured every year, and have no more pruning than just enough to keep it trained. To make it bloom, get it to grow freely; when established and in vigorous growth it will bloom freely, both in summer and autumn. In severe winters it must be protected.

Banksian roses will seldom bloom until they have been established three or four years. They must be pruned after the flower has gone off, which is generally the end of May or beginning of June; shorten long vigorous shoots nearly a third; the bloom comes on the one and two years' old wood.

An attempt to enter into the merits of all the varieties of all the different classes would spread out the sechapters to too great a length; but those who wish to judge and select can easily get a good choice in the published lists at the flower shows, or from the rose-growers.

In selecting for planting, we want to know of each one, the kind, the habit of growth, and the colour; and all these items are specially noted in rose catalogues published by all the rose-growers who exhibit at the flower shows: these lists are laid round the stands for the use of visitors at the horticultural meetings, or are willingly sent by the rose-growers to any who may apply for them; and therein we may find all our named favourites, with all their characteristics noted down, and the price of each.

The following are the important points of a good rose: Constitution should be hardy, healthy, and of a tolerably robust habit of growth, with good foliage, and a good bloomer. The flower must be fine in form, full,

large in size, and decided and distinct in colour. The form of the flower, whether it be cupped, globular, or widely expanded, should be symmetrical; the petals even and regular in their arrangement, full, but not too crowded; the outer range broad and firmly set, rendering the flower lasting. In texture they should be firm and thick, not thin and flimsy. Fragrance, and a firm upright stem, are points. A green or yellow centre to a flower when open is a great fault.

CHAPTER X.

FLORISTS' FLOWERS : ANEMONES, CALCEOLARIAS,
CARNATIONS, CHRYSANTHEMUMS, CINERARIAS.

THE term florists' flowers is applied to those kinds which can be brought to a great degree of perfection and novelty in size, colour, and other properties, by careful cultivation. Such flowers and plants are reared with exact precision by gardeners and amateurs; they have special classes at horticultural shows, and the attainment of a new variety in any of them is a great triumph to the grower. I only purpose to enter into the merits of these to the extent which will be found useful in a little work like the present.

As a great desideratum is to grow new varieties, it is a good thing if such flowers hybridize freely, or vary much when grown from seed.

Anemones, as common garden flowers, five or seven roots in a patch, may be grown without difficulty, and form pretty clumps of gay bloom; but to rear them in high order requires more care. To make an anemone bed, dig out the earth to the depth of a foot, spread a layer of well-rotted cow manure six or eight inches thick, over this spread fresh loam, enough to raise the beds three or four inches above the level of the path or grass around, and let it be ready for planting in October.

Rake the surface very fine, and make in it furrows to receive the anemone roots, five inches apart and two inches deep. Plant the roots, buds upwards, four inches apart, strewing some sand in with them; little bits which break off may be planted, and they will become roots. The anemones, as they shoot, must be protected from frost with mats, stretched over hoops, or any efficient covering of the sort; and this must be removed whenever the weather permits, or the roots will suffer from damp. When the plants grow, let them be watered with rain water, enough to save the fibrous roots from withering from drought. When they have done flowering, the beds should be covered again with hoops and mats to keep them from wet, and in about a month the leaves will have withered, when the tubers may be taken up, thoroughly dried, and kept in a dry safe place until the season for replanting them comes round.

For raising seedling anemones, the seed should be cleared from the fluff, and sown in August, and the young tubers may be taken up when the leaves wither the following summer, and planted again in autumn, to flower the year after. To increase the varieties, divide the tubers, but not too much, or the plants will come weak. The beds may be kept longer in bloom, if the roots are put in at three different dates: the end of September, October, and very early in spring. They will not do in a stiff soil. If the leaves are distorted, the earth probably wants more draining. To prevent mildew, mix a little salt or sea sand in making the bed; to try to cure it, sprinkle with sulphur.

The points of a good single anemone are: a strong elastic erect stem, nine inches high, or more; flower two and a half inches across; petals large and stout, standing out horizontally at first, and then turning upwards into a shallow cup; colour, when mixed, clear and distinct; when unbroken, brilliant and striking. Double anemones should have the outer petals quite flat, the second range shorter, the third shorter still, and so on, with the centre full; the flower should form a rather flat hemisphere. The double anemones must be self coloured.

The anemones which are cultivated as florists' flowers, are the offspring of *Anemonia coronaria* and *Anemonia hortensis*, multiplied *ad infinitum*; besides these, there are many other kinds.

The *Anemonia Japonica* or perennial anemone, is a nice, hardy, free blooming garden plant, which will do in any common garden soil, and produce its profusion of large, deep pink, anemone-like flowers from the end of summer until winter; it can be increased by division of the root to almost any extent.

Calceolarias, besides being favourites to cultivate as florists' flowers, make gay flowers for the garden, to plant in groups, or for bedding plants; but as they will not stand frost, young plants should be made in the autumn, separated and planted in pots singly in the spring, gradually hardened by May, and then planted out.

For choice calceolarias use the following compost: one bushel of light sandy yellow loam (if it be not sandy, add sifted river sand), a quarter of a bushel of leaf-mould, and half a peck of thoroughly decayed cow-manure; mix it well, and let it be used rather dry. Seed may be sown either as soon as it is ripe, or in spring; and as soon as the seedlings are up they may be placed on a shelf, near the glass, in an airy greenhouse. When they are large enough, plant them singly in 2½-inch pots, and re-pot them as often as they want it, until they are in 6-inch pots, and then let them flower. Those that are good in form, bright and distinct in the colours, and of a fair size, re-pot again, and keep to increase by cuttings, and all indifferent flowers can be used to make the garden gay. Cuttings may be taken when the flowering is over in August, or in March. Commence potting autumn-struck cuttings early in March, and those struck in spring as soon as they are fit. Let the pots be well drained with crocks. Re-pot about three times, and leave the plants in 11-inch pots to bloom, keeping them near the glass in a light airy greenhouse, giving them plenty of air. No flower stem must be left until the plants have made their growth. They

should be in perfection early in July, each plant being two feet high and as much across, and then the flower stems may be allowed to grow. The plants require a great deal of training and tying before they are considered presentable. As soon as the flowers are dead, cut them off, unless seed be required; cut down the stems, and put the plants out of doors, or in a cold pit; give plenty of air, and return them to the greenhouse before frost; keep them there until cuttings are taken in March, and then they will be no more wanted: for old plants are not handsome, and are thrown aside as useless.

Calceolarias do not bear forcing well, and they are subject to a disease a little like that of the potato, which seems to be contagious, so that when dark spots appear on the leaves and stems, the plants affected should be removed at once. Wet at the root is supposed to cause it.

Carnations should have a place in every garden where they will grow, no less for their beauty than for their delicious fragrance. As florists' flowers, they are divided into three classes: Flakes are striped with one colour and white; Bizarres are streaked with two colours and white; Picotees, which are the hardiest as well as perhaps the most beautiful, have each petal margined with colour on a white or yellow ground, or dotted with very small spots. The beautiful and deliciously scented clove is said to be the original form of the carnations.

To make a compost for growing carnations, take loam from an upland pasture, cutting thick turfs from the surface. Let them lie in a heap for a year, turning them over every month, and picking out the wireworm with great care. To this add one fifth part of cow-manure which has laid to rot two years, and a fifth part of well decayed vegetable mould. Mix these together, and let them lie three months longer, turning them over three or four times during that time.

Choice carnations are very often grown in pots. They are planted for flowering, generally in pairs, about the end of March, in 11-inch pots, well drained with crocks (as they are injured by much moisture), and

with the earth well pressed about the roots. Use the compost without sifting, but look through it well for wireworms. Place the pots in a sheltered part of the garden, on a bed of coal ashes, water when necessary, and as the flower stems shoot up, place a stick to each, high enough for the flower when it comes out, and tie the stems very slackly, for fear of their bending or breaking. As the buds swell, thin out all but the most plump and healthy. When the flower begins to open, it is very apt to burst unevenly. To prevent this place an Indian rubber ring round the bud, or tie it with a bit of bast, and if it is inclined to burst on one side only, cut the calyx a little open at two other places, with a fine pair of scissors. When one side of a flower is spreading too much towards the sun, turn the pot round. To make flowers bloom in fine spreading form, paper collars are put round them, to which to spread the bloom. The collar is a round piece of stiff white paper, with a hole in the middle to receive the calyx, the leaves of which are turned down to keep it in its place. The outer range of petals is arranged on the white paper, and it should not extend beyond; and then, range after range to the centre, the petals are put in nice order, and I believe the tweezers are used with any which are insubordinate or faulty. When flowers are exhibited, all this manipulation seems hardly fair, but it is a question which the most influential judges would find it difficult to place under rule. Before the plants come into bloom they should be ranged on stages or stands, the feet of which should be placed in earthen or leaden cups for water fifteen inches wide and three or four inches deep, with a socket in the centre large enough to receive the feet, to keep off the approach of slugs, and all creeping destroyers. The stands should have an awning to keep off sun and rain. Watch the flower stems to support them as they grow taller. The flowers come in June or July.

Carnations are generally propagated by layers laid down the end of July and beginning of August, when the plants are in full flowering vigour: the earlier it can be done, the better the layers will be established before

winter. Choose fine healthy outside shoots, not those which have, or have had, flowers. As earth to cover the layers, have ready a compost of light loam and leaf-mould, half and half; and the best pegs for fixing them are made of fronds of the common fern, birch, or hazel twigs. Dress the stems intended for layering by cutting off all the lower leaves, leaving about six nearest the top untouched. If there are too many good shoots in the pot, take some off for pipings. Make an incision with a very sharp knife on the under side of the first layer, just below the third joint, bringing the knife slanting upwards partly through the joint. Still holding the cutting, take a hooked peg in the other hand, and with it fasten down the layer, pressing it gently, but firmly, down to the soil. Proceed in the same way with the layers all round the plant, and then cover the slit joint with the compost to an inch in depth. Do not water the newly layered plant until the next day, by which time the wounds will have healed over partially. Layering is done in the same way when the roots are planted out of doors. The young plants may be separated from the parent plant, and potted, in August.

Carnations may also be propagated by pipings, when the flowering is over. Fill the necessary number of pots with the compost prepared for the carnations nearly up to the top, and fill up with silver sand. Break off the pipings at the third joint, then in each piping cut a little upward slit, plant them in the sand pretty thickly, and place the pot on a gentle hot-bed, on a bed of sifted coal ashes or river sand; put on the sashes, and shade the pipings from the sun, until they have rooted, then harden them off gradually, and plant them out into small pots.

The chief points in a carnation are a firm upright flower stem, calyx well and regularly opened, flower round, with the petals regularly disposed, largest outside, decreasing in size to the centre, and colour clear and distinct. Those with stripes should have the stripes widest at the edge of the petals.

The yellow picotee carnations are very striking. These

beautiful flowers, in all their varieties, need by no means be neglected by persons who do not care for them as florists' flowers, for their culture is quite within the scope of any lady's gardening. Good carnations are often grown from seed. Packets of seed of twelve choice kinds are sold for 3s. and 3s. 6d. by Messrs. Carter, of Holborn, and no doubt by other first-class seedsmen. Sow the seed in the spring, and when the seedlings have made six or eight leaves prick them out in pots or prepared beds: the next year will show their merits.

Pinks naturally seem to follow carnations. The commoner sorts are most useful in a garden, especially the white, white and chocolate, and deep pink and chocolate, which form great patches of their respective decided colours, and keep flowering for a long time. They will thrive in almost any garden, but require rich earth to make the bloom fine and large. Beds for choice, *i.e.* the laced pinks, should be made with loam and a fourth part of well rotted manure, raised above the ground around, and highest in the middle. Pinks require similar cultivation to carnations, but they are raised by pipings taken in May or June. Plant in rows, twelve inches apart every way, shelter them in winter (wet is more injurious to carnations and pinks than a slight degree of frost), stir the earth round the roots in spring, and mulch them with a little well decayed stable manure early in June. Pinks, when good, have the edge of the petal white, the lacing distinct and fringed at both edges, and a distinct eye at the base of the petal. The flower should be very large. Old plants are not good for the florist, but form nice roots for the borders.

That curiously stiff looking, yet pretty and varied flower, the Sweet William, belongs to the *Dianthus* family also.

The *Chrysanthemum* has even a greater merit than the gaiety and endless variety of its handsome flowers: there is no other plant so brilliant in bloom, that can so easily be cultivated under the disadvantages of a crowded smoky locality. All who have seen the collec-

tion of chrysanthemums in the Temple Gardens, in the very heart of London, will give this plant due praise for this its especial merit; and all seers owning little gardens at home, struggling through the disadvantage of a smoke-laden atmosphere, and looking miserable from an attempt to cultivate plants that object to smoke and soot, should at once make chrysanthemums their especial gardening specialty. A flower which is of every shade, of almost every colour, and varying in size from one inch to four inches across, is not like one flower; it is a host in itself. It grows freely in a light rich soil, and flowers most abundantly from October to December. Our old favourites, the large flowered kind, than which nothing is handsomer in appearance, are the progeny of *C. Sinense*; and the later favourites, the pretty pompons, have sprung from the Chinese daisy, sent home by Mr. Fortune.

Chrysanthemums may be increased by all modes of propagation. Take cuttings in February; young shoots, three inches long, cut with a sharp knife, and plant them round a medium-sized pot, filled with sandy loam, with a layer of pure sand on the surface. Water the cuttings to settle the earth to them, place the pot on coal ashes or river sand, in a warm place, and cover it with a hand glass. When they have grown they may be potted off separately, and put under hand glasses again, for a time. Re-pot whenever the roots reach the pot, and keep them where they will be safe from frost and damp. They will bloom the same year.

To procure low dwarf plants, plant out in the open ground some old plants, as soon as the frost is fairly gone, and peg down some of the branches. Then when these have formed flower buds, sink small pots filled with light rich earth, peg down one of the branches into each pot, giving it at the same time a little twist, cover with half an inch of soil, and it will root. When the layers are well rooted they may be divided from the parent plant, and placed in the shade until they are established, and they will be nice showy little plants for the front row in a stage of chrysanthemums. Chrysanthemums may also be

increased by suckers, division of the root, and seed. The seed must be taken from flowers of a fine shape and bright colour, and sown in February, slightly covered with finely sifted soil. Give them a little heat, gentle watering with a fine rose when dry, and when they get three or four leaves they may be planted singly in small pots, kept in a temperature of 55° to 60° , and re-potted whenever they require it. Some will flower the same year.

You can scarcely give chrysanthemums earth which is too rich: in a mixture of half and half light loam and decayed dung, with a little addition of peat, they will grow and flower well.

Plants which are intended to bloom in pots should be shifted into good-sized pots in April. For plants grown from the spring cuttings 9-inch pots should be used, and for older plants 12-inch. At every potting, stop the shoots to make the plants grow bushy. The last potting should be in the middle of June; then and from that time discontinue nipping off the ends of the shoots. As the branches grow, tie them out so as to give them room and air; and with plants intended for exhibition thin the buds that the bloom may be large. While they are in full growth give them plenty of water, and liquid manure once a week. Never let them flag from the first to the end of the flowering, but water, with a rose, over head and all twice a day in hot weather. From May until they flower they should stand on a bed of ashes, or on gravel, in an open situation, and when they begin to flower they may be removed into the house, taking care to give them plenty of room. When the flowering is over, cut down the shoots which have bloomed, place the pots in a cool pit, and give just water enough to keep them alive, until the growing season approaches again. Chrysanthemums are nearly hardy, and do not need much protection, only a covering of a mat or so to keep out severe frost. The old plants which grow unmanageable in pots will be very handsome in the flower borders, where they will keep up a gay show in autumn.

There are several pretty showy annual chrysanthem-

mums, which should be sown in the open borders in April.

Cinerarias are gay in spring, for the decoration of rooms or stands, with their bright masses of bloom—purple, pink, carmine, violet, bright blue, lilac and white, and sometimes a pretty mixture of two colours. They are grown from cuttings or seed, and good soil for them is a mixture of peat, loam, leaf-mould, and sand. To get cuttings, cut down the plants when they have flowered; and when they have grown again sufficiently take off the cuttings, and plant them in pots filled with the compost, with a layer of silver sand on the surface. When the cuttings have thrown shoots about three inches high, they should be stopped to make the plants grow bushy. They should be re-potted whenever the roots grow well, before they get too much matted, and be treated occasionally with a little liquid manure. The seed should be sown as soon as it is ripe, and scarcely covered with earth. Cinerarias may also be increased by offsets. They are terribly subject to the green fly, which must be watched and destroyed by fumigation when it makes its destructive appearance.

CHAPTER XI.

FLORISTS' FLOWERS—DAHLIAS, FUCHSIAS, HYACINTHS,
PANSIES, PELARGONIUMS.

DAHLIAS are cultivated as florists' flowers, but they are, like several I have already mentioned, in such general use as handsome useful garden flowers, that they may be considered to have both characters. Although they flower in autumn, and keep flowering until quite late, they will not bear the slightest degree of frost; the tuberous roots must not consequently be put in the open ground until there is little chance of more sharp weather; and if frost should come late, the young plants

must be covered at night with large clean garden pots. They require a deep rich friable soil, but not over rich, which produces fine leaves at the expense of flowers. The ground may be trenched as deep as its nature will allow (a foot and a half or two feet deep), and a good layer of decomposed manure afterwards laid on the surface, and at once dug in a spit deep. Lay the soil thus prepared up in ridges until the time for putting in the dahlias, when it may be raked level. The roots, having been kept through the winter in a dry place, safe from frost, are started in a hotbed to show where the eyes are. They may then be divided, taking care that each piece has a portion of the collar, with an eye or two, and planted in pots, kept safe from frost, and turned out when the time comes, either spaced about the beds or in entire beds. The dwarf kinds make good bedding plants, pegged down. To be fine and good in colour, dahlias must have plenty of room and air, and they should have a spot sheltered from high winds, as the branches are heavy and brittle. It is best to fix the stakes before putting in the roots. Dwarf kinds should be five feet apart, and the taller ones six. When they have grown up into nice bushy plants throw a little half-rotted stable litter round each to preserve them from drought, and to give nutriment when they are watered. As they grow large they will want plentiful watering in hot weather. When they are high enough to require it, they must be tied to the stake with broad shreds of soft bast, and the side shoots will also require tying with longer pieces to prevent their being broken with wind and heavy rain. It is sometimes necessary to place some side stakes round the centre one, to which to tie the side branches. The thinnings of larch plantations make the best stakes. As soon as frost touches the tops of the plants, cut them down and dig up the roots at once. If they come up clean and dry they may be put away very soon, but if the soil clings to the tubers it must be cleaned from them, and they must be dried. The place for storing them must be safe from frost, and dry, but not dry enough to make the roots get

shrivelled. The chief points in a fine dahlia are the shape and form of the flowers; they are globe-shaped, quilled, dwarf, &c., and must never on any account show green or yellow in the centre. The flowers, of whatever kind, must be perfectly circular in shape, and each circle of petals should be as nearly as possible a perfect circle too.

When the flowers are intended for exhibition, they must be protected with caps of oiled canvas, stretched on wire frames, or with garden pots turned upside down on the top of a stake, to which the flower is carefully tied. Boxes made on purpose are sometimes used. For sending the flowers to an exhibition cut them overnight, and arrange them in boxes which are made on purpose, with a watertight tube to receive each stalk. Fill the little tubes with water, pass the stalk of each flower through a plug of wood made to fit the tin tube like a cork, and having a hole through the centre just large enough to admit the stalk and hold it firmly. Place a lid on the box, with room for it to avoid touching the flowers.

Dahlias may be propagated from cuttings of the young shoots which first spring from the roots, or young tops taken off at a joint, any time from February to August. This is especially valuable for the early increase of new sorts. If there are plenty of shoots from the roots some can be spared, when three inches long, taken close down to the bulb; but if there are none to spare well, cut them off so as to leave two buds at the base of the shoot to grow again. Plant the cuttings in pots filled with light earth and a layer of silver sand on the top, and place them on a gentle hot-bed; if the pots can be plunged in coal ashes, or such like, they will strike the sooner. Water them carefully and moderately, and shade them from the sun. They ought to strike in a fortnight or three weeks, and may then be potted in $3\frac{1}{2}$ -inch pots, and kept close for several days to make more root. Then they may be put in a cool frame, shaded from the sun, and kept safe from frost and wet. Before the roots get matted, pot again into $4\frac{1}{2}$ -inch pots, and then begin to

give air daily, and keep them well watered. The cuttings will make nice little tubers by the end of the year.

New dahlias may be got from seed. Gather seed, as soon as it is ripe, from flowers of distinct colour and good form ; hang the pods up in a dry place, and when the scales of the pods turn brown, separate the seed, dry it (in the morning sun only), and put it by in a dry place. Sow the seed in March, and as soon as the seedlings are large enough, plant them off singly in small pots, and as soon as there is no longer chance of frost, plant them out a foot apart and allow them to flower. All which produce bad-shaped or dull-coloured flowers, may be thrown away at once ; but such as have flowers of good colour and shape, with petals of good form, should be kept another year for trial. Any that turn out very good had better be propagated by cuttings from the young tops to save the kind in case the root should die.

Fuchsias are no less popular than dahlias, and are even more beautiful than they. They grow quite freely in the open air, but unless in warm sheltered positions, they must be protected for the winter, or taken up. As they produce new sorts readily from seed, the varieties are almost innumerable. They are greedy of manure, and will do well in a mixture of one-half mellow strong yellow loam, one quarter thoroughly decayed leaf-mould, and one quarter old hot-bed manure, all well mixed. *Coccinea*, *virgata*, *conica*, *gracilis*, and *globosa*, do well out of doors, and all the attention they need is to cut them down after the first frost, and cover the roots with moss, coal ashes, or other litter, to keep out the frost ; to remove this in April, and thin out the shoots in May.

Fuchsias grow well from cuttings taken in February and March, needing thus early a little heat to stimulate them into growth. The best bits for cuttings are said to be young shoots taken off close to the old wood as soon as they are an inch long. Plant them in pots of loam and leaf-mould, equal parts, and a layer of silver sand on the surface. Water the earth to make it firm, trim the lower leaves from the cuttings, plant them, give another gentle watering, and place them on a mild

hot-bed. When they have rooted, pot them off, and re-pot them as they require it. Not that taking fuchsia cuttings need be confined to spring; they will grow all through the growing season, and root so readily, that whenever a shoot is broken by accident it may be put in at the side of the pot of the parent plant, and in due course it too will become a nice plant.

New kinds may be reared from seed; and to get new varieties, impregnate the pistil of one with the pollen from another, and when the seed is ripe gather the berries, crush them, wash away the pulp, and dry the seed on a paper in the sun. Sow the seed in March, plant out as soon as the seedlings are large enough to handle, and let them be until they flower, and as soon as they flower discard the poor and keep the good ones.

Fuchsias in pots must be new potted in the spring, removing some of the old soil, and trimming the roots and branches, so as to leave the plants in a pyramidal form; fill in with proper soil, water moderately, syringe over the whole plant often, and when they are in full growth give liquid manure. Young plants should be stopped to make them grow bushy. Fuchsias are very handsome, grown to a single stem. The potting should be finished with 12-inch pots, which are large enough for fine plants fit for exhibition. As soon as the flowering is over, the young plants may be placed out of doors in some open part of the garden. The old plants may be planted out in the borders, as they will not be handsome a third year. When frost begins, take the pots in-doors; they will do in any place where they can be kept from frost, and will require very little water through the winter.

The Hyacinth has the merit of being quite the oldest cultivated of florists' flowers, and its fragrance is equal to its stately beauty. Simply planted in the flower borders, hyacinths are handsome, sweet, and easy to grow in great beauty; as fine roots, only requiring planting out and proper treatment, may always be bought. Wherever you wish to place the bulbs, loosen the earth late in autumn with the spade, to the depth of a foot, and clear it of intruding roots from neighbouring

plants. Arrange the bulbs—a centre one, and the rest in a circle round it—near together, well pressed into the earth, and covered with three or four inches' depth of earth, if it be garden loam, and five or six if it be sandy. The hyacinth is hardy, and more likely to suffer from wet than from frost; so, if the soil be not very light, a little gutter may be scraped out round the roots to drain off the superabundant wet; or the bulbs may be planted on a sloping border, and that will answer the same purpose. Thus planted, they will flower well even for three years.

The more artistic method of growing hyacinths is planting them in beds, where the beautiful flowers and gay variety of colour look very well. To make the beds, dig out the earth in September to the depth of three feet, and fill up to one foot above the surrounding ground with sandy loam, mixed with leaf-mould and well rotted cow-manure, or that from an old hot-bed. In October, plant the roots six inches deep and six inches apart, and during the winter protect them from severe frost and too much wet. When the bloom comes an awning should be put over the bed to shade it from sun and wet. As soon as the flowering is over, give plenty of air, and when the leaves turn yellow, take up the roots, label each with its name and colour, and place them in an airy shady place, until they are quite dry. Clean the roots, rub off the dry rootlets, and store them, upside down, on a shelf of laths until the time for planting again. If canker attack them, slight injury may be cut out, and rubbed with powdered chalk; but if the canker be extensive, the roots affected had better at once be thrown away. Before replanting, the soil of the bed should be partially renewed. The offsets may be planted out for a year, when they too will be good roots.

The single flowers will produce seed, which, in ripening, will sacrifice the parent root. If it be wished to obtain new kinds, sow the seed as soon as it is ripe; the seedlings will come up the following spring, and, if well cared for, will flower in from three to five years.

To flower hyacinths in water, dark-coloured glasses and rain-water are best. Place the roots for a few days

in damp sand, put them in the glasses in December, let the water only just touch the bottom of the root, and put the glasses away in a dark cupboard until the rootlets are an inch long. When the plants grow, put two drops of hartshorn in the water; a piece of charcoal in each glass, too, will do good. When the water gets thick, and wants renewing, pour it out very gently, without disturbing the root, which should be carefully held in its place the while. If, in spite of care, a long root gets broken, raise the bulb and cut it off close to the root with a sharp knife. When the bulb is growing the water should not quite reach it. Roots will flower only once in glasses, but they often do in the beds afterwards.

For growing hyacinths in pots appropriate pots are made, much deeper than those in general use. Plant the roots in October in compost like that for the bed, pressing it very firm under the bulb, and leaving the crown above ground; plunge them at least two inches over head in tan or ashes, and as they are wanted for flower bring them into heat. If some are forced from a month after plunging they will be ready for Christmas.

Pansies require a tolerably light soil, made very rich. The best is light loam and decayed turf from pasture land thoroughly mixed, and one-third from a two years old cucumber bed. Manure water, especially guano water, may be applied while the plants are in flower. The pansy bed should be in a spot sheltered from all cutting wind, yet open and airy. It should have the morning, and be sheltered from the mid-day sun, and the bed should be well drained, so as never to get sodden.

To obtain fine bloom for ornament or exhibition in May or June, plants from cuttings struck the autumn before will do best, and for blooming in autumn those struck in the spring of the same year. When these plants have bloomed, keep them for making cuttings, as the young plants always produce the finest flowers.

Cuttings may be made in August, September, April, and May, and the young side shoots are best for the purpose. Plant them in light earth, mixed with silver

sand, place them in a cool frame, or under hand glasses, keep them moderately moist, and shade off the hot sun. They may also be propagated by division of the root, and by layers, merely pegged down, not slit, on account of their tendency to damp off. New sorts may be raised from seed, which must be sown as soon as it is ripe, in a bed, where the young plants may remain until they give themselves a character, good or bad, by flowering.

Pansies are rather apt to die off suddenly, without apparent reason, perhaps sometimes from too stimulating manures. If any especially good or rare plant begin to wither in the leaves, take cuttings at once, for it will most likely die. As a preventive, lightly fork and rake the beds between the plants.

A fine pansy should be large and round, the petals fitting exactly to each other to give this circular form, colour fine and distinct, and eye distinctly marked.

The boxes in which to exhibit the flowers have zinc plates, on which the petals lie flat, with tubes for water fixed below for the stalks. Each hole for the stalk is long in shape, so that it takes in the calyx, and so fixes the flower down flat.

Pelargoniums, our dear old friends, formerly called Geraniums, are favourites with all on account of the gay beauty of their flowers, and the facility with which they can be kept, propagated, and grown, with no appliances whatever except some place in which they may be preserved from frost. Wherever they are kept they should have a free circulation of air around them; if they can have light on all sides they will grow all the better for it, and the plants should be so placed that they can grow quite free of each other. To make excellent soil for potting geraniums get turf cut thick from an old pasture, where the grass is fine; chop it up and lay it in a ridge, facing east and west, so that it may get the sun on both sides in the course of the day. Let it be turned over every three months for a year, and then it will be fit for use. If it then be found to be too heavy and close in quality, add sand.

The points of a fine geranium are, first, the form of the flower; then substance, then size, and last colour. Habit of growth and size of truss of flowers are also to be considered. Never save seed from any but first-rate flowers, and in crossing let the plant which is to bear the seed possess the quality of good form in the flower. Take the pollen from plants having properties wanted, having previously cut off the anthers from the flowers to be inoculated, and as soon as the flower is set cover it with a bobbin-net bag to keep it safe. Gather the seed as soon as it is ripe, keep it in a dry place, and sow it early in March, in light rich earth. Place the pots in a hot-bed, and when the seedlings are growing, remove them to a shelf in the greenhouse, near the glass. With these and all seeds be careful not to sow too thickly; if they come up very far apart, the seedlings will be all the finer; but if they come too thick, the young plants will lose much in fineness. When the seedlings have made their second leaves pot them singly, in two-inch pots, in good compost, and put them back on the shelf, but shade off hot sunshine. As soon as they fill the pots with roots re-pot them, keep them near the glass, and give them plenty of air. When the weather is settled fine and warm, put them out of doors, on a bed of ashes, in an open situation, to ripen the wood, and induce a bushy habit. In the autumn, when there may be frost, take them in. Do not top them, but let them grow and flower as soon as they will, as a test of worth. I have found it answer to sow the seed as soon as ripe, and prick out the seedlings when large enough, and those which live through the winter will flower the next year, and thus save time.

Cuttings may be put in from March to August, but the usual time for getting an abundant stock of them is when the plants are cut down, after they have done flowering, to induce them to make bushy plants for the next year. This is generally from the end of June to the end of autumn. They will strike readily anywhere, in the good earth in which the parent plants grow; the earth in which they are grown should not be pressed

too tight, and it should neither be very wet nor very dry. Side shoots that have not flowered make the best cuttings. Trim the cuttings, as cuttings usually are trimmed, by cutting off the lower leaves, and leaving two or three at the top intact; but afterwards place them in a dry place in the shade to dry the cut ends for an hour or two before they are put in. Plunge the pots in the frame, or place them where they are to stand, so that the cuttings will not touch each other, and shade them from the sun. When roots are formed, pot them separately; and as they grow, stop the top shoot, and afterwards the side shoots, to make them grow bushy. The kinds which are very difficult to strike with cuttings may be increased by division of the roots. Shake the mould from the root of an old plant, cut the root into pieces, and plant each piece in as small a pot as it can be got into, leaving the top visible. Shade until they shoot upwards and downwards, and then give more light. The shoots will come in bunches; as they grow, strip them off one at a time until only one remains, which is to be left to become the future plant. When it is three inches, stop it to make it shoot at the sides.

Cut down old plants in July; place them in a cold pit, and water moderately rather over the tops than to the roots. Then give a fair watering, so that every good root may get a share. When the buds break, give air gradually, and when the shoots are an inch long shake the mould from the roots, prune the roots a little, and shift the plants into pots of the same size again, or rather smaller; return them to the cold pit, and keep them close until the roots are growing. Then give air gradually, and get them out of doors, but keep them from cold, rain, and any approach to frost. Those cut down in June and July may be got into blooming pots at the end of October, and those cut down in the end of July or in August will not want re-potting into the larger pots until the spring, thus giving succession of bloom.

Winter requirements are cleanliness, air, light, plenty of room, and a temperature seldom below 45 degrees; in

winter it should not be higher. With large plants little stopping will be required after re-potting, but thinning will sometimes be needed, so that the old plants will bloom earliest, as stopping and re-potting delay the flowering period.

CHAPTER XII.

FLORISTS' FLOWERS (*concluded*).

PETUNIAS, PHLOXES, AURICULAS, ETC.; RANUNCULUSES,
TULIPS, AND VERBENAS.

PETUNIAS, besides being cultivated as florists' flowers, are useful, from rapid growth and freedom in flowering, either for plants in pots or for bedding. They may be raised from seed, sown on a hot-bed in March, and planted out in May; or the seed may be sown out of doors as soon as it is ripe, and protected with a little litter in cold weather. It may also be sown out of doors in the spring, when all chance of frost is past. When grown out of doors they must have a warm sheltered situation. Petunias will grow from cuttings of the ends of shoots, or side shoots. In the spring they require a little heat, but in summer and autumn they will strike without. The plants must be kept in-doors, protected, or put in a cold pit in winter, as they will not stand frost. A light rich sandy loam is the soil they like.

When they are cultivated in pots they must have plenty of room for the roots. When fine large plants are wanted, begin with them in small pots, shift them into larger and larger by degrees, and stop the tops and shoots until the plants are large and handsome in shape; then allow them to flower.

When petunias are wanted to cover a bed, do not stop them, but peg down all their long shoots, and the side shoots will put out freely, and make a good show of

bloom. The white petunia and its hybrids have the flowers scented.

The Phloxes are gay useful plants, of various heights, flowering almost incessantly. They are all perennials, except *P. Drummondii*, an annual which is very pretty either for the flower beds or for growing in pots. Its seed must be sown in April, in gentle heat, and the plants may be planted out of doors in May. Many of the phloxes are good as bedding plants. Seed may be grown out of doors in April or May. When seed does not ripen, cuttings may be struck in August, and kept through the winter.

Many of the recently grown phloxes are very beautiful, and these gay flowers have the merit of blooming very freely, the different kinds in continuous succession almost through the year. They are increased by division of the root, and by cuttings taken in summer, and struck under a hand glass, in a shady spot. Sandy loam and leaf-mould is the soil.

P. pilosa amœna, with pink flowers, *P. nivalis*, with white flowers, *P. setacea*, with flesh-coloured flowers, and *P. subulata*, with dark purple flowers, are quite dwarf in their habit; and to them may be added *P. procumbens*, with flesh-coloured flowers, and *P. reptans*, with blue and purple; and from these there are all heights, up to five and six feet, and all colours—purple of all shades, pink, rose, red, blue of different tints, lilac, white, and flesh-coloured. Whether it be to cultivate them as choice flowers, or to ornament the garden, no lover of flowers should be without a nice collection of the superior kinds of phloxes.

The *Primula*, or Primrose kind, yields three favourite florists' flowers—the auricula, the polyanthus, and the primrose. Auriculas must have a rich soil, and whatever manure is used to make it so should be so thoroughly rotted before it is applied as to be in fine powdery mould: such manure may be mixed in equal parts with good light garden earth, and if for pot culture add about a sixth of coarse sand. As florists' flowers, auriculas are grown and bloomed in pots.

The almost innumerable named sorts are divided into five classes—green edged, grey edged, white edged, selfs (*i.e.* those of one colour), and alpiners; the last have the edge of the petal shaded by a mixture of two colours, not separated into distinct bands of colour as in the edged ones, and they are yellow in the paste, whereas the others are white. There are technical terms used by auricula fanciers: the group of stamens in the *tube* is called the *thrum*; the part next the tube, which is yellow in the alpiners, and white in the rest, is the *paste* or *eye*; the next colour on the petal, and the distinctive colour, is the *ground colour*; the outer colour or border is the *edge*. As in all flowers of this kind, a single flower is called a *pip*, and the whole group on the stem the *truss*. *Pin-eyed* is when the style is higher than the anthers—an unpardonable fault in an auricula. A fine auricula should be large and circular, and the petals should be equal, firm, fleshy, smooth at the edges, and quite flat. The centre or tube should not be more than a fourth of the diameter of the flower, quite round, well filled with the thrum, and with the edge standing a little above the eye. The paste or eye should be circular, smooth, and of a dense pure white, without crack or blemish, forming a band not less than half the width of the tube. The ground colour should be dense, unbroken, and forming a perfect circle. The brighter, darker, or richer the colour, the better the flower. The edge should be clear unchangeable green, grey, or white, about the same width as the ground colour. The more exactly the flower is divided into four in the breadth of its circles the better—the tube, the eye, the ground colour, and the edge. The ground colour may be a little wider; and the edge may feather into it a little. The colour should not be changeable. The stem should be strong, firm, round, and upright, from four to seven inches long, and the flowers of the truss should all bloom out at once, forming then a compact semi-globular truss of five or seven flowers, of equal size, perfect form, and standing out distinct and apart. It looks well if some of the leaves grow up

well with the bloom, and the foliage should be healthy and abundant.

New sorts are obtained from seed. Inoculate as in the geranium, and when the seed is ripe, gathered, and dried on paper, sow it in September, or keep it in the seed-vessel and sow it in the spring. Raise the seedlings in light earth, keep them weeded, and when they are a nice size, plant them out in a box or border, eight inches apart. They will flower in the spring, when good ones should be potted singly. The usual mode of propagation is by slips divided from the sides of the root, which generally have roots of their own: they should be taken when the bloom is gone off, and planted singly in pots.

The plants should be re-potted when the flower is quite gone off, which will be by the end of June. Take off the suckers that have roots, shake the earth from the old roots, trim the roots a little, replant them, draining the pots with crocks, and place them on a layer of ashes, in a place having an eastern aspect, that they may get the morning sun only. Water in fine weather, and keep them free at all times from slugs, worms, and the green fly. When the weather gets hot remove them to a north border, and shelter them from heavy rain, and by winter place them in a frame, six inches only from the glass. They will require good ventilation, and in fine weather plenty of air, but very little watering, and that given on fine sunny mornings. Stir the earth in the pots often, and constantly clear away slugs and wood-lice. By the end of February top dress the pots with mould and manure, with a little sand dried. In a month more the bloom will show; then keep them rather warmer, with protection of mats, &c., at night, but still give air freely in very fine days, and water plentifully, but without wetting the leaves. When they are in flower they must be shaded from rain and sun, and the beautiful bloom on the leaves and on some of the flowers must on no account be disturbed.

Auriculas are subject to canker. The only thing to do is to take up the plant directly a yellow unhealthy

appearance shows itself in the leaves, cut away the affected part of the root, fresh pot it, and remove it to a cool shaded place.

The Polyanthus is cultivated much like the auricula, but it is a hardier and stronger plant, and only very choice kinds are grown in pots. A fine flower should be flat, round, a little scalloped at the edge, and three-quarters of an inch across. It should be divided in five or six places as if into petals, each division cleft in the centre, so as to give it a heart shape, and the indentations not reaching to the yellow edge. The edge must be the same colour as the eye; the ground colour must be clear and well defined. The tube, the eye, and the ground colour should all be of the same width.

The seedlings vary so much that raising them is very interesting. Sow the seed as soon as it is ripe in July, in a shady border or in pots, very slightly covered. Seed sown as soon as it is ripe will produce plants which may flower at the end of a year, but which will be sure to do so the following spring twelvemonth. Treat the young plants like auricula seedlings. The polyanthus is, I believe, a sport from the primrose.

Primroses, delicate and pretty as they are, have an additional value from coming out so early, when flowers are scarce. There are double kinds, in different colours, for the garden, but none can rival the chaste beauty of the sweet wild flower, which has a merit that few wild flowers have; we can transplant it from its native wilds, and it will grow and bloom, and still delight us as it does when it peeps out with modest beauty in the wild woods. The pretty Chinese primrose is a greenhouse plant, of which there are varieties with flowers of different shades of lilac, white, and pink: there are some, too, double, as well as the fringed Chinese primrose, all valuable from flowering through the winter. They are biennials. New plants should be made every year, by cuttings struck in sand, on heat, under a bell glass, or by seed. The pots in which they are grown should be well drained with crocks, and they should be grown in very rich earth, mixed with a little sand.

The choice Ranunculuses have tuberous roots, and are too tender to bear our climate out of doors, without some protection. They require a loamy soil, made rich with manure thoroughly rotted, and leaf-mould. It should feel soft to the hand, and have a very little sand added to it. For making a ranunculus bed, dig out the earth to the depth of about a foot, lay in a layer two inches thick of rotten cow-manure, and fill in with the compost until the bed is two or three inches above the surface. The bed had better be made in January, so that it may mellow and settle by the time for planting the roots—towards the end of February. The earth should at the time be just so moist that if a handful be squeezed and let fall it will go in pieces. Rake the surface fine, and plant the roots, two inches deep, and five inches apart. Choose a fine day for planting, and sprinkle a little sand in the drills made for the roots before planting them. When the roots are placed and partly covered, fill in just over the crowns with sand. When the plants begin to grow, press the earth firmly about them, and the bed must be protected from frost and heavy rain: the best protection is some waterproof covering over hoops. During April and May a little watering may be necessary, and a little tan or moss spread between the rows to keep the soil sufficiently moist. When the flowers come they must be protected from sun and rain by an awning, and the roots will then want watering every second or third evening. July is the flowering season. In a wet season the roots should be taken up when they turn yellow, but in a dry one they may remain in the earth until the leaves are brown. Take them up as dry as can be, and let them dry off quite in a warm place, not in the sun, when they may be put by.

New sorts may easily be raised from seed. Save from none but flowers which are good in form and colour. Sow in boxes, in February, about the eighth of an inch apart; cover the seed thinly, water with a fine rose, and keep the boxes in-doors, but without heat. Let them have air, but protect them from frost. When

the young plants are grown, sink the boxes in the open ground, and water them until the leaves wither, which will be about July, and after that take up the roots, keep them in bags until February, plant them then, and they will flower the June after. The general mode of propagation is separating the offsets from the larger roots.

For getting the ranunculus to flower in winter, keep back some tubers from planting, plant them in pots the beginning of August, and force them a little before they are wanted.

These are pretty showy flowers for the garden, and there are several common kinds often grown in gardens: the white and yellow bachelor's button, globe ranunculus, and several others.

The cultivation of the Tulip, now almost out of fashion, was once a mania, and in truth a tulip bed in full flower is a gorgeous sight. The best situation is a spot which is open to the south and south-east, and well sheltered from north, north-east, and north-west winds. The tulip bed must be well drained; where there is depth of good loam, on a dry gravelly or sandy subsoil, very little draining will be required. When, however, for want of good draining subsoil, the bed has to be made, dig out to the depth of 18 inches; below this lay draining tiles along the middle of the bed. Cover them and the bottom of the bed to the depth of three or four inches with rubble, small stones, clinkers, and such like. Place over this a layer of straw or brushwood, a layer two inches thick of well rotted cow-manure, and then fill in partly with the earth, which should be good loam, mixed with a sixth part of thoroughly decomposed hot-bed manure, and fill up quite with the same mixed with about a third of river sand. The bed should be flat; and if the locality be unfavourably damp, it had better be some inches above the surrounding surface, the edges well supported with slate or board edging. September is a good time for making the bed. Tulip fanciers consider the best time for planting the bulbs to be as near as possible to the 10th of November, but the best rule

is to plant them at such time, according to the locality, that they will not push through until the severe weather is past. They should be so planted that the tallest stems shall be in the middle of the bed, and the shortest at the edge, descending in gradual gradation. Make perfectly straight drills two inches deep, and press the roots down in them, five inches apart. Let the drills be nine inches apart. Cover the bulbs with a rake, and stir the earth between with a tulip fork—a small three-pronged fork, with a short handle, almost indispensable in tulip culture, and, in fact, in the flower beds generally. Protection must be provided, either hoops over the beds with canvas covers to put over them when wanted, or regular awnings with the covers to put up or down. This protection forms necessary shelter from late frost to the roots, from cutting winds at all stages, from too much or too heavy rain, and from the sun when the bloom is out. It must, however, be used with caution, not to make the plants too tender. After flowering, the bulbs should be left until the leaves turn brown, when they may be taken up, laid out to dry, cleaned, and then stored in drawers, with labels to distinguish all the named sorts. The tulip bed must be renewed in the soil before it is used for tulips again, although it is said to do without for polyanthus, and many other flower roots.

A fine tulip should have a cup-shaped flower, round at the base; the ground colour must be quite clear on the inner side of the petals, and all the marking should be sharp and distinct. A *feathered tulip* has a dark edge to the petals; the feathering is called *light* if narrow, and *heavy* if wide. *Flamed tulips* are those having a dark spot in the centre of each petal: some flowers are both feathered and flamed. A *bizarre tulip* has a yellow ground, with coloured markings; a *biblomen*, a white ground, with black, lilac, or purple markings; and a *rose*, a white ground, with markings of crimson, pink, or scarlet. There are also *selves*.

New sorts are raised from seed, and the seedlings do not flower until they are about five years old, when they produce flowers of a dull indistinct purple tinge.

Afterwards they are called *breeders*, and go on producing these dull flowers four years more, when they break, *i.e.* show distinct marking or colour. To bring them to break sooner it has sometimes been recommended to starve them in poor soil, with little water, and then to remove them suddenly to rich soil, with plenty of moisture, or to send them to a new locality and air.

As common garden flowers, tulips need only a top dressing every year.

The Verbena has been increased to all shades and all varieties of colour as a florists' flower, and it is also one of the best bedding plants we have, from its creeping habit of growth, and the readiness with which, when pegged down, it will cover the earth and root itself all over it. Verbenas will root freely as layers, strike as cuttings, and thrive in the open air through the summer; but frost cuts them off. It is, therefore, necessary to make young plants in autumn, and keep them indoors until the frost is gone, when they may be planted out. A rich sandy loam suits them.

A small piece as a cutting is said to form a better plant than a large one, and points of the shoots will strike in spring, in a little peat, or in silver sand. We have often struck plants of this and many other kinds, for making the garden gay, in a saucer of silver sand on the mantelpiece of any room in constant use as a sitting room. The seed may be sown in a slight hot-bed in March, or in the open air in May.

The *Verbena melindres*, a fine scarlet, was one of the earliest we had, and some that have been bred from it are of a more intense scarlet, and hardier—*V. melindres*, *latifolia*, and *splendens*. The verbenas are rich in numerous splendid scarlets, crimsons, purples, violets, and lilacs of every shade; those of a deep rose colour, and also the white, are most useful as bedding plants. Some of them—*V. Neillii*, *V. teucrioides*, and others—are sweet-scented.

The plants which go under the general name of "the American plants" have a department given up to them in extensive establishments, for they all require about

the same treatment. They must have a well drained peaty soil, do well on a sloping bank facing north or east, and require plenty of water. The Rhododendrons, Azaleas, and Andromedas will thrive if overshadowed by trees. The best annual dressing for them is decayed leaves and the bottom of an old wood-stack, or any mixture of earth and old woody fibre. Spent tan or sawdust is good for them, or any refuse of the same character. In making compost for them use two-thirds vegetable matter, with one-third of ordinary light soil and sand. A covering of moss is beneficial to them. The American plants are Azaleas, Rhododendrons, Heaths, Kalmias, Andromedas, Ledums, and Vacciniums; the first two of which are florists' flowers.

The American Azaleas are propagated by layers, laid in March: cover the layers with moss to retain moisture, and leave them on the parent plant until after the second year's growth. The Indian or Chinese azaleas may be propagated by cuttings of young tops three inches long, trimmed only in the lower leaves, and stuck in pots of silver sand, over peat. When they are planted, water them gently, cover them close, place them in a temperature of 55° to 60° , and keep them shaded from the sun. When they are rooted put them in a greenhouse, take off the bell glass every night, and put it on in the day. Pot off singly, keep them in a close frame until the roots are growing well, and then harden them off to bear sun and air, and, by re-potting from time to time, get them to a large size. Azaleas may be grafted in early spring, on stocks of *Azalea Indica alba* and *A. Phænicea*, both easy to strike. Varieties may be raised from seed taken from the best shaped flowers and those of the best colours crossed with each other. Sow the seed in February, in gentle heat, and when the little plants have three or four leaves prick them out far apart in pans fresh filled with sandy peat. The following spring they may be potted out singly. Azaleas will not bear frost. Keep them for the winter just safe from frost, and water sparingly. When they begin to show for bloom give more heat and a liberal

supply of water. After the flower is off, keep them in a temperature of 55° to 60° , and syringe them freely. Train the trees to a good shape by judicious stopping; when they have made their growth, give them plenty of air for a few weeks, and then set them under a low north wall until autumn. The hardy azaleas will live out of doors, in a peat border, with a little protection from frost. These and all the American plants should be watered with soft water.

Most of the *Rhododendrons* are hardy, but a few of them require a little protection to bring them to their beauty. They grow in sandy peat, kept rather moist, and are propagated by layers, either in spring or autumn. Cuttings may likewise be taken when the base of the shoot by the older wood is getting firm. The *Rhodora Canadensis*, a native of Canada, is a pretty plant, with flowers like small rhododendrons, requiring similar culture. It flowers in the open ground in April, but it may be forced, under glass, with a little heat, to flower quite early.

The *Vacciniums* are the Wortlebury family, one of which, a *Thibaudia*, was shown at a recent horticultural meeting, of which Dr. Poeppig, a well-known traveller, had stated that the young shoots were so brilliant in colour that they were seen a league and a half off.

There are others which might be included amongst florists' flowers, but those which I have taken, and roses, include all which can be cultivated by amateurs, without more costly appliances than fall to the lot of many.

CHAPTER XIII.

BEDDING PLANTS.

THE kind of flower garden most in favour at the present time is the set flower garden, laid out in beds of various forms, each bed filled and made gay with roots

of one flower, or else with roots of one flower completely to cover the centre, and with bands of another flower, handsome either in bloom or in foliage, to surround it. When all the beds can be made gay with bloom and healthy foliage at the same time, it is very effective, though stiff and unlike the gaiety that nature shows us. With it, to get the beds all in prime blooming condition at one time, and to keep them so, is an imperative necessity for the beauty of the garden. Constant attention must therefore be bestowed on it: such attention as ladies, with leisure at command, can so well give. In addition to not allowing a weed with a dozen leaves to hold its unwelcome place, all the flowers as they wither should be cut off; to keep the plants long in bloom, all shoots inclined to get too rampant in growth should be stopped, those too backward in growth encouraged with a little liquid manure, and nothing be allowed to run a hair's breadth out of order. In planting this kind of flower garden it should be made a study to select flowers which will be in beauty at the same time, and, as far as can be managed, such as will remain in beauty for about equal duration.

The ribbon borders are on the same principle of massing the colours, the flowers being arranged in close bushy rows, each row contrasting with its neighbours in colour of flower and foliage.

In the plans given an effort is made to shape the beds so as to avoid very sharp angles, narrow strips, and all shapes which it would be very difficult to maintain, and in which it would be impossible to keep the flowers from straying over the edge.

Among the florists' flowers already spoken of are many capital bedding plants. The common yellow *Calceolaria* gives a capital mass of bright yellow. Take cuttings in autumn, keep them in-doors through the winter, harden them gradually, and plant them out in May, in a rich light soil. Fuchsias of free growth make *recherché* beds, with the tallest plants in the centre, descending gradually to quite low plants round the edge of the bed.

All the florists' flowers that are usually planted in this way make beautiful beds, such as anemones, ranunculuses, hyacinths, pansies, tulips, and others. The

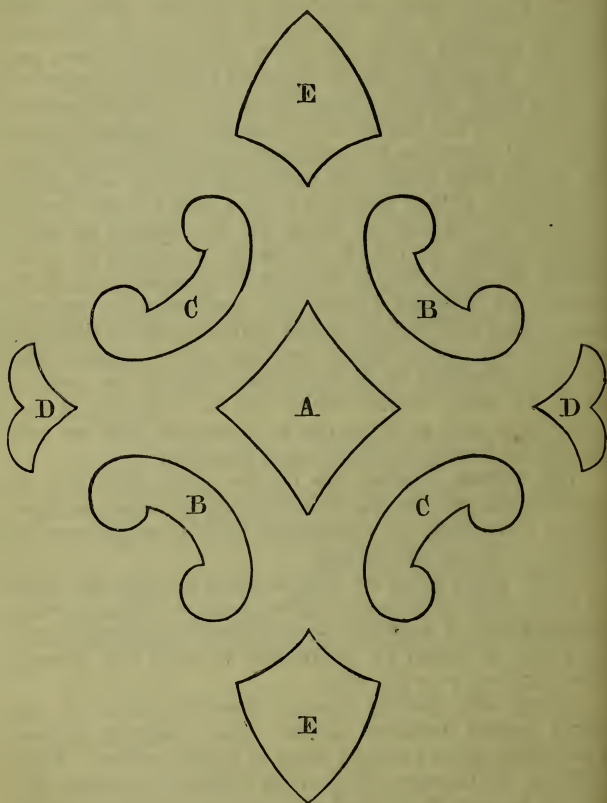


Diagram No. 1

- A. Pampas grass, pale lavender Phlox round.
- B. Broad-leaved Myrtle and scarlet Salvia mixed.
- C. Broad-leaved Myrtle and blue Salvia mixed.
- D. Purple Petunia.
- E. White Foxglove, scarlet Geranium round.

verbenas are first-rate bedding plants, and offer valuable masses of flower in all shades of crimson, rose, scarlet, purple, violet, and mauve, besides a good white. Purple king verberna is in constant requisition. Verbenas flower in the summer, and keep gay a long while. Petunias are especially good as bedding plants, because the flowers are large and conspicuous, and full and varied in colour, showing a good mass of bloom at one time. They bloom from June onwards, and keep in flower for months. All plants of a creeping habit, which throw out abundant masses of showy bloom, are good for bedding, and all upstanding flowers used for forming beds should be of low bushy growth, and such as flower so abundantly as to show the whole plant a mass of bloom when the flower comes out.

The pegging down, so useful in getting a bed covered with foliage and flower, is done with twigs cut just below where there is a fork. Cut one side of the fork short, and leave the other a few inches long: the long side is pushed into the earth, and the shorter bit fixes the stem to be pegged down.

The plants with foliage of peculiar colour form an important feature in gardens of this kind, and have the merit of filling a void in maintaining a pretty general appearance at any time that accidental disarrangement may happen to those the beauty of which depends on the flower. Among plants of beautifully varied silvery foliage we have the variegated coltsfoot and *Cineraria maritima* before mentioned. *Cerastium Biebersteini* and *Cerastium tomentosum* have a low habit of growth, and white flowers. They are easily propagated by division of the root in spring, and will grow in any light moderately rich soil. For taller silvery foliaged plants we have the *Salvia argentea*, three feet high, bearing yellow flowers in June; the *Stachys lanata*, two feet high; the *Arctotis grandiflora argentea*, about the same height, and requiring a mild sheltered situation, and a place in-doors for winter; the *Agathæa cælestis variegata*, the same height, and also delicate, with beautiful blue flowers; the *Centaurea argentea*, *Centaurea candidissima*, and *Cen-*

taurea gymnocarpa. The *Alyssum variegatum* makes a nice showy silvery edge to a bed, as does also the variegated mint.

There is a peculiar beauty and distinctness in the dark foliaged plants, on account of which their value in assisting the variety of bedding plants should not be overlooked. The *Perilla Nankinensis* makes a capital mixture in a bed of bright-coloured flowers: threepenny packets of the seed can be bought, and reared without difficulty. The *Oxalis tropæoloides* is a charming half-hardy annual from the Cape of Good Hope, growing close to the ground, and with fine dark bronze foliage. A plant recently introduced, the *Iresine herbsti*, will also make a splendid bedding plant. The foliage is beautifully ornamental—dark crimson leaves, with ribs and stems of carmine. It is readily propagated, and only requires to be housed in a cool greenhouse for the winter. Of all the dark foliage plants, perhaps none are more beautiful or easy of culture than the *Atriplex hortensis rubra*, or garden orach, with its beautiful crimson foliage. A packet of seed may be bought for a few pence, and the plants are reared without difficulty.

No less handsome and valuable for beauty of foliage are the tricoloured horseshoe geraniums Mrs. Pollock and Sunset, every leaf of which is a gay mixture of green, bright bronze, red, crimson, and golden yellow. Sunset has a compact dwarf bushy growth. The variegated geraniums, with white and golden yellow margins to the leaves, are showy and gay-looking.

The best and freest blooming scarlet, pink, salmon, and white geraniums, are most useful for bedding.

The Lobelias are general favourites, from their thick low growth, and the abundance and intense colour of the bloom. They are especially good for outer rims to beds of geraniums and other full warm-coloured flowers. In the general flower garden they look pretty in clumps, and will also grow on rockwork; and they have the great merit of remaining all the summer months in bloom. *Lobelia speciosa* is the finest, from the intense-ness of its blue, with a clear white spot, and the deep

green of its foliage. *Lobelia gracilis*, in its several varieties, is best for rockwork, pots, or hanging baskets. They require a light rich soil. Plants raised from seed in autumn, and kept indoors for the winter, will be ready for planting out when frost is over in the spring. The seed is so minute that it must be very slightly covered with earth.

The Nasturtiums, with their peculiarly elegant, curious, and brilliant coloured abundant flowers, have most deservedly grown into great favour. Allowed to run on the ground, if of the tall kinds, and planted over the beds if dwarfs, they are good bedding plants. Sow the seed under glass in April, protect the young plants from frost, and plant them out when the frosts are over. *Tropæolum lobbianum elegans*, the Crystal Palace nasturtium, is of a good habit of growth for bedding. The double-flowered kinds are curious and pretty. All plants of the family delight in light rich earth, and flower from early in summer till frost interferes with their gay beauty.

The Cuphea is admired as a bedding plant, remaining in flower for several months. The *Cuphea eminens* is especially good for the purpose, from its graceful branching habit and immense number of long tubular scarlet, and yellow flowers. The *Cuphea platycentra*, the flowers of which are a mixture of scarlet, white, and purple, is also a good plant for beds. The seed should be sown in a hot-bed in the spring, and the young plants hardened off by the end of May. They will do for planting out the same season. They may also be grown from cuttings taken in the spring. They require a dry rich soil.

The Ageratum, of which there are many varieties, keeps many months in bloom, and the greyish blue of its flowers contrasts very well with the more brilliant hues of many others. They are annuals, and grow well in any good garden soil. Cuttings may be taken in autumn, and kept indoors through the winter, but it is better to grow the plants from seed, which should be sown on a hot-bed in February, pricked out, and planted out in the beds in May. They begin to flower in June or July, and flower for a long time.

The *Gazanea elegans*, with its leaves of deep shining green above, and cottony white beneath, and profusion of large brilliant orange flowers, with yellow and dark chocolate centre, studded with clear white, like pearls, has but one fault—it shuts up close whenever the sun is not shining on it. It grows quite close to the ground, keeps long in flower, and will grow in any good garden soil. It is propagated by cuttings, which may be taken at the sides of the plant in August, more sparingly in the spring, and raised under a hand glass, in sandy soil. From its low growth and brilliant flowers, it would make a gorgeous border for a centre of more sober colour. The *Gazanea splendens* is, I believe, newer.

The Heliotrope, from its delicious fragrance, and the sweet unobtrusive grey of its pretty flowers, should find a place in every flower garden, and the plants may be kept to the desired form by pegging down. It looks nice when contrasted with gayer colours. It grows in a rich light soil, and the plants must be housed in winter, and may be planted out in May. Those with the very dark flowers are handsome. It is increased by cuttings struck with a little heat in spring, or under a hand glass in autumn.

The Salvias are quite first-rate, rather tall bedding plants. Either *Salvia splendens*, or *Salvia patens*, mingled with the rich green of the broad-leaved myrtle, forms beds something very near perfection. *Salvia splendens* has fine large scarlet flowers. *Salvia patens* is the brightest and purest of all blue-flowered plants. *Salvia splendens compacta* is said to be the finest salvia grown, and is literally covered with bloom, and grows only a foot and a half high; and *Salvia coccinea* is another universal favourite, also bearing scarlet flowers. The salvias want a light, very rich soil, and are propagated by cuttings inserted firmly in the ground in autumn or spring. They bloom in summer, and keep in beauty a long time.

African and French Marigolds, *Tagetes erecta* and *T. patula*, also *T. lucida* and *T. pumila*, are all bright coloured, and useful for beds where plants of their

colour and growth happen to be wanted. Seed should be sown in a hot-bed in April, and planted out in the middle of May.

Those half-hardy annuals, the Zinnias, are good for beds, on account of their abundance of brilliant flowers of all colours—carmine, crimson, orange, purple, rose, scarlet, yellow, and white, and almost all the colours, may be had in the double-flowering kind, which is very handsome. Messrs. Carter and Co. sell sixpenny packets of seed, single or double (including all the colours), which should be sown in a hot-bed in April, afterwards hardened, and planted out when there is no more danger of cold. They require a good rich loamy soil. They will often come fine if sown under a hand glass late in April, and protected at night. They flower from Midsummer to Michaelmas.

The *Saponaria* has several varieties, none more than half a foot high, remaining in flower from June almost to November. Its masses of minute rose-coloured blossoms are pretty, and there is one of a pure white. Most of them are hardy annuals; the seed should be sown in the open ground in April. They thrive in sandy loam, with a little peat or decayed vegetable earth. *Saponaria ocymoides* is a perennial, which may be propagated by division of the root, or cuttings of the points of the shoots. It is of a trailing habit, and is good for knolls or rockwork.

The *Cyclamen* is a charming flower with which to fill a bed; its drooping delicate flowers, and low habit of growth, are very pretty, but it does not remain very long in bloom. The root, being a solid corm, will not divide, so young plants must be grown from seed. Gather the seed as soon as it is ripe, dry it slowly, and sow it in February, in a mixture of peat, loam, and sand. Cover the seed with scarcely a quarter of an inch of earth, and sow it far apart, because the young plants should not be disturbed for a long time. When they are a year old they may be potted singly, re-potted in April, and kept in a gentle heat, to increase the size of the bulbs. Many of the cyclamens will grow out of doors in a warm

situation and good compost, but the bed or border should be well drained, and a covering of tan or coal ashes should be laid over the roots in autumn, and left until the weather gets warm. The bulbs may be taken up and replanted in October, or they may be left in for two years. Slugs and wireworms are very destructive to them. Most of them flower in the spring, but a few early in autumn.

Cyclamens are very pretty in pots. They should be planted in autumn, have little water until the flower is formed, and after that plenty. They may be kept in a frame until they flower, and then brought into the greenhouse or room. The Persian cyclamen is a greenhouse plant, and is sweet-scented.

Several of the Larkspurs are good for bedding, especially where tall groups are wanted. *Delphinium formosum* and *D. Hendersoni* are hardy perennials, growing rather tall, producing fine blue and white flowers the first year, provided the seed be sown early. *Delphinium grandiflorum caelestinum* is a handsome variety, growing not more than two feet high, and producing flowers of a splendid blue. They may be sown in sandy loam, in the open ground, and will keep in bloom from June or July for several months.

Where a mass of brilliant yellow is wanted, the *Escholtzia* may come in conveniently, but in a tolerably warm place, with light earth, care must be taken that it does not become an encroaching weed. In any place where it has grown, and which it likes, it is only necessary to watch for the young plants to come up, when a bed of it, or large clump is wanted, and remove them with so large a ball of earth that the roots are not disturbed. It grows near the ground, and keeps in full flower from Midsummer to August. The white are delicate, but poor compared with those of a full yellow and orange.

The Lantanas are very nice bedding plants, growing from one to two feet high, and producing their pretty compact bunches of flower of various colours, from June to September. Increase by taking cuttings when growth

commences in the spring, about two inches long, close to the old wood. They grow in fibry peat and loam, flower in summer, and keep in flower many months. If they are grown from seed, the plants must be raised in a hot-bed.

The *Leptosiphon* is a very pretty hardy annual, easy of cultivation, growing in any good garden soil. The different sorts are from half a foot to a foot high, and keep in flower from June to October. The seed may be sown out of doors in March. *Leptosiphon densiflorus albus* is valuable from the purity of its white, producing masses of bloom that are very telling in a bed. There are other varieties with lilac, orange, purple, and yellow flowers.

The pretty little *Memophila* is very nice for borders, from its low bushy growth and abundance of bloom, keeping in flower from June for many months. It will grow very readily from seed, in any garden soil. It is in almost all colours.

Portulacas are beautiful, free-blooming, half-hardy annuals of almost all bright colours, of a low habit of growth, and keeping in flower from Midsummer to Michaelmas. The seed should be sown in a compost of sandy peat, leaf-mould, and burnt earth. When the plants are pricked out, which may be in June, an inch or two of lime rubbish, burnt earth, and sand should be spread on the ground, to prevent the plants damping off. They require scarcely any water.

Pentstemons are tolerably hardy, tall perennials, producing handsome flowers of various colours in the autumn. *P. Murrayanus* is a brilliant scarlet. *P. Hartwegi* and its varieties, and *P. pulchellus* and its varieties, are very free blooming kinds. To get them to flower early in autumn, sow seed early in March in a hot-bed, and plant out in May. If sown out of doors in spring they must have protection. They may be increased also by division of the plants in spring, or by cuttings of the young shoots in spring, summer, or autumn, under a glass, in sandy loam and leaf-mould. *Gentianoides* and its varieties require a little protection in winter, unless

the position be warm, and for security it is best to take cuttings of them, and keep them in a cold pit through the winter.

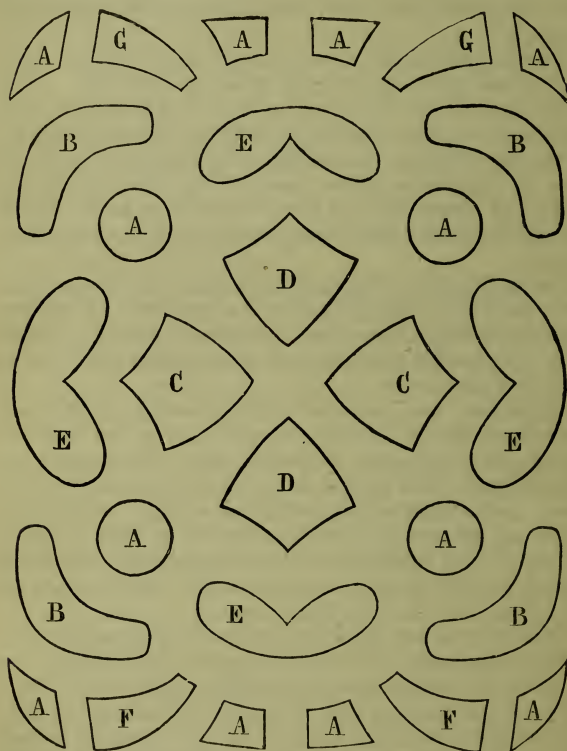


Diagram No. 2.

- A. Rose-bushes: Jules Margottin, Duchess of Sutherland, and Marquise Boccella.
- B. Scarlet Geranium, border of blue Lobelia.
- C. Purple King Verbena; border, Mrs. Pollock or Sunset Geranium.
- D. Heliotrope pegged down; border, Mrs. Pollock or Sunset Geranium.
- E. White Petunias; border, Goldenchain Geranium.
- F. Yellow Calceolaria.
- G. Purple Petunia.

The *Ænothera* and *Godetia* are large showy flowers, some of which grow very tall. The *Æ. acaulis* bears very delicate silvery-white flowers; the *Æ. grandiflora*, and many others, are a bright pure yellow. The *Godetias* are hardy annuals, many of them purple, allied to the *œnotheras*. *Rosea alba* is white, with a bright crimson spot on each petal. They may be raised from seed sown in the garden in March and April, or sown in September and protected in the winter. The annual *œnotheras* may be served in the same way. The perennials may be increased by division of the plants in spring, and the rarer kinds by cuttings of the young shoots under a hand glass, early in summer. Seed of the perennials should be sown on a slight hot-bed in the spring, and planted out in May.

Sanvitalia procumbens is a beautiful hardy annual, growing close to the ground: a capital plant for covering a bed, or for borders. The flowers are a rich brown and yellow, and large in proportion to the size of the plant. Sow in March or April, in the open ground.

In arranging this list of plants for the garden of set form, I have tried to introduce all heights and all varieties of colour, so that whatever may be the situation, form, or size of the bed to be planted, an appropriate suggestion may be found. Masses of *white* may be obtained in several *verbenas*, *campanulas*, *geraniums*, *phloxes*, *œnotheras*, sweet *alyssum*, white *Clarkia*, *petunias*, and white *Salvia patens*. For *scarlets*, *verbenas*, *geraniums*, and *salvias* are the grand resource. For *purples* we may get supplied amongst *verbenas*, *petunias*, *lobelias*, *lantanas*, and *phloxes*. Fine *pinks* may be found in *geraniums*, *verbenas*, and *salvias*, besides many plants more particularly described above. For *blues* we have *lobelias*, *cinerarias*, *salvias*, and several common flowers. The *yellows* already named are sufficiently numerous, and in addition, *Coreopsis lanceolata* and many others might be given.

CHAPTER XIV.

BULBS, TUBERS, ETC.

BULBS, and plants of similar character, are especially valuable on account of the little room they take, in proportion to the size and handsome appearance of their flowers; also because a great many of them bloom when other flowers are scarce, and they can be cultivated without difficulty. When bulbs are in a state of rest, the approach of which is indicated by the leaves dying after the flowering is over, they should be moved and kept out of the ground a longer or shorter time, according to the kind. With the summer flowering kinds this happens in autumn; and with those which flower in autumn, in the spring. Some have to be taken up annually, others will go on without for a number of years, and none should be kept long out of the ground. Almost all bulbs require a free, dry, and rather rich soil. They are injured by being allowed to go to seed. As they grow fast while in the growing stage, they generally require plenty of water and depth of soil.

In the case of many, interesting new colours may be obtained from seed, which should be sown far apart in beds of light earth, where the young plants can remain until they flower, which is often from three to five years, sometimes much longer.

That magnificent tribe of flowers, the Lilies, are noble ornaments in any flower garden. We have scarcely so fine a white in any other flower as in the white lily, *Lilium candidum*. The situation for these roots should be well drained, and the soil for them is a good loam, well manured. If left in a place they like, the clumps will improve in size and beauty; if, on the contrary, they decline, take them up in September, change the exhausted soil for good compost, place at the bottom of

each hole, where it is intended to replant, a shovelful of rotten dung, and plant three strong roots in each clump. They should not be kept any time out of ground; they will flower the year after, and much better the year after that. The small offsets can be planted in a nursery bed of the same rich earth, and in two years or so they too will be fit for planting in the garden.

The Martagon Lily, or Turk's Cap, may be treated like the white lily, only mix sand with the soil in which it is planted.

Those well-known lilies, the Tiger Lily and Orange Lily (*Lilium tigrinum* and *Lilium aurantium*), make handsome showy clumps in the flower garden, producing abundance of flowers respectively in August and September, and May and June. These may be planted in the same way as the white lily, but when the flower stems grow up they throw out rootlets round the bottom; to strengthen the flowering, these should be encouraged by throwing a few little lumps of manure round the stems for them to take hold of. These lilies increase abundantly by the formation of tiny bulbs at the axils of the leaves on the flower stems. When these fall with a touch, plant them, six inches apart, in a bed of light earth, richly manured. In two or three years plant them out again, double the distance apart, and in two years more they will be fine bulbs.

The magnificent *Lilium lancifolium* in its few beautiful varieties, should be a matter for investment, in the necessary number of shillings for the purchase of the roots, and in the necessary care for its not difficult cultivation, for every one who really loves splendid flowers—and who does not? There are the white, the red, and the golden. The last is of comparatively recent introduction; in addition to the rich crimson spots on its delicate white petals, it has a beautifully shaded, bright gold band down each, and it is magnificent alike in the size of the flower, and in the size of the spray, as the bulb reaches maturity. These roots make beautiful greenhouse plants, and they will do in the open ground in the southern parts of England. For pot culture,

plant the large-sized bulbs early in March in 11-inch pots, three together, in rich sandy earth. Place them safe from frost, give very little water, but plenty of air in mild weather. They should grow slowly to give strength to the roots, and when frost is over for the year they may be plunged in a bed of old tan, until, from the advancing season, the greenhouse gets thin of plants: then place them there with pans under the pots, mulch the surface with well rotted dung, and give air and water liberally. In the open ground they may be cultivated like the white lily, but there must be a covering of dry ashes, or some such protection, over the bulbs in winter. They throw out roots at the bottom of the stems like the tiger lily, and are propagated, like the white lily, by offsets.

Iris (although I include them in this chapter) are of three kinds, the fibrous rooted, those which grow from tubers, and those which grow from bulbs. The first like a rich loamy soil, the others will thrive better in leaf-mould and peat, with the addition of sand, as much damp rots the roots. The fibrous rooted are increased by division of the roots, and taking off the suckers; and the tubers by division. The bulbs form new roots, and as the new come under the old roots, they should be taken up and replanted every second or third year. The handsome Chalcedonian iris requires a dry soil in winter, and plenty of pure air. The Tigridia, or Jersey iris, of which there are several varieties, is a showy flower, with a gay mixture of scarlet, yellow, and chocolate. It grows well in sandy loam and leaf-mould, and the roots must be taken up for the winter. Each flower lasts only one day, but every root produces several. The irises are summer flowers.

The Agapanthus, or African Lily, is a half-hardy bulb from the Cape of Good Hope: the large umbels of blue flowers, and its free growth, keeping verdant all the winter, are familiar to all. It flowers in summer, and keeps in flower a very long time. The roots are generally grown in pots, as they must be housed safe from frost in the winter. Forming a portion of a group under a

verandah, on a large stage, to flank steps to a house, on a parapet, or in any similar position, provided it be sheltered, they look handsome, and retain their beauty a long time. The roots should be re-potted the beginning of spring, in rich loam, with leaf-mould, or rotted manure. Place them in a greenhouse, when they begin to grow freely give them plenty of water, and turn them out of doors in May, in a sheltered spot, with pans of water under the pots. If they are kept to flower indoors, let them have plenty of air. When the flowering is over withhold the watering to a great extent, to get the earth in the pots pretty dry, and take them in as soon as there is danger of frost. They should be kept very dry until they show signs of vegetating. The African lily forces easily with bottom heat and plenty of water, but the flowers will be pale in colour. For increase separate the roots while they are in a dormant state. In the Channel Islands they live out of doors. I have never known them tried in the open ground in England, but from their hardiness I do not see why they should not do, in a warm situation, if protected during the dormant stage from wet and frost.

The Belladonna Lily, *Amaryllis belladonna*, has the fault of sending up its stem of beautiful, bright rose-coloured, lily-like flowers, without leaves, like sunshine without shade, and similar anomalies, sometimes, but not often, found in nature. The situation for them must be well drained and sheltered; they will do out of doors only in warm situations, and they must be taken in for the winter. They are from the Cape of Good Hope, and flower late in summer or in autumn. The rule to be observed with all bulbs, to give them a season for growth and a season of rest, must be especially kept to with belladonnas: give them plenty of water, heat, and all encouragement at command, when they are coming into flower, and starve them in those items when the flower is past, until they are in a state of rest, *i.e.* non-growth; then keep them in a temperature several degrees above freezing, and give no water. The roots may be planted in a warm border, six inches deep, not too soon

in spring, and taken up before frost can come. When it is wished to make them flower early, take dormant bulbs, pot them in sandy loam and leaf-mould, place them in heat beginning at 50°, and increasing gradually to 60° or 70°, and when the leaves grow, give plenty of water. If it be considered desirable that seed should ripen, the plants must be watered until the seeds are ripe, but not so liberally as while the plants are in flower. The seed should be sown directly it is ripe, in sandy loam, and the pots should be placed in a moist house or frame, near the glass. Pot off the little plants when they are two inches high, shift them as often as they want it, and they will reach a flowering size when about a year and a half old: the pots should be well drained with crocks. In the west of England, the Channel Islands, and similar localities, the belladonna lily does well in the open ground. Planted near together, the roots become a mass which need not be disturbed; and thus grown they look very well, as there are generally some roots with leaves in each clump, as well as those in flower, and this takes off the bare look which flowers without green always wear.

Anemones, ranunculuses, tulips, hyacinths, and many other flowers, coming into the category of the fleshy rooted plants proposed to be included in this chapter, have been already discussed.

The *Tritoma uvaria* makes such fine showy clumps in a garden that it should never be left out. Its tube-shaped flowers, shaded from scarlet to pale yellow, are produced in great abundance, and the roots may be bought at one shilling or two shillings each. It came to us from the Cape of Good Hope, flowers in summer, remains in beauty a long time, delights in rich sandy soil, and requires protection from wet and frost in winter. It is increased by division, and by suckers from the roots.

Tritoma grandis is of stronger growth, flowers when *T. uvaria* leaves off, and continues in flower quite into winter. The two will continue in beauty five months or more.

The Tuberose is a bulb which is largely grown in Italy for exportation. The roots may be bought for about three shillings a dozen; they may be brought forward in a frame, and when they are coming into flower they may be planted out or removed into the house or greenhouse. The fragrance of their pretty white flowers is more fitted for out of doors than for a house. For soil they require rich sandy loam.

The Gladiolus is a bulb from the Cape of Good Hope, which will stand our winters if it can be kept dry. For planting the roots in the garden, dig out the earth a foot deep, and put in a layer of good leaf-mould or well rotted manure, and for the surface mix well manured garden earth with sand. Put in the roots six inches deep, cover them with an inch in depth of sand, and then fill in the earth. Rake the surface smooth, keep it weeded and stirred from time to time, and in sharp weather cover the roots with dry litter several inches thick. When they throw up the spikes for flower let them have plenty of water. The early flowering sorts may be planted the end of October; *Ramosus*, *Formosissimus*, &c., in December; and *Gandavensis*, *Floribundus*, *Psittacinus* and *Splendens* in February and March; and they will bloom well in the autumn. The gladioli make nice pot plants. They increase well by offsets, which should be divided from the old roots when they are taken up after flowering, and planted at once in a bed of very rich earth, thoroughly well drained.

New varieties may be obtained from seed by hybridizing the finest formed flowers with pollen from flowers of the most beautiful colours. Sow the seed in gentle heat in the spring, and when the seedlings are up let them have plenty of air and very little water. As the weather gets mild put them out; leave them to gentle showers, but shelter them from heavy rain. When the leaves die off pick out the little bulbs, and in September make beds for them, as for the offsets, and there let them remain two years, when they will flower if transplanted into a new well-made bed.

The *Ixia*, *Tritonia*, and *Sparaxis* are pretty flowers,

similar in character, and very varied in colour in the different kinds. They grow in peat, mixed with sand, and will grow out of doors in a warm border. They must be protected from frost, and the roots should not get too dry while they are growing. They may be potted in October, kept from cold or heavy rain, and placed in a greenhouse, or in a window when the roots begin to grow. They have a slender growth, and are from half a foot to two feet high, and they most of them flower in the spring.

The *Polyanthus* *Narcissus*, Single *Narcissus*, *Jonquil*, Double *Daffodil*, and all the *Narcissus* tribe, are most valuable in a garden, from producing their delicately beautiful fragrant flowers early, and without much trouble in the cultivation. They are all hardy, and will grow in good garden soil, if sand be put round the roots. The fine large bulbs produce the finest flowers. They may be allowed to remain in the ground year after year. When the flowering is over the leaves must not be cut off, but left to die down. Most of the kinds produce offsets from the bulbs freely, and they may also be grown from seed. Roots wanted for forcing should be taken out of the ground when the leaves have died down, and be kept in a dry cool place until the autumn. Almost all flower in spring, some very early. Only *Obsoletus*, with white, and *Veridiflorus* with green flowers, bloom respectively in August and September.

Crocuses are almost a necessary for making the flower garden gay in early spring, for the ground is scarcely clear of snow when the beds become enamelled with their large sized, bright coloured, prettily varied flowers, of brilliant gold, purple, lavender, and white, plain or variously streaked. Any garden soil will do for them, but they prefer rich sandy earth. They may be planted from towards the end of summer to the end of November; and to make beds gay in spring which have been filled with summer flowers, the crocus roots should be put in as soon as they can be obtained. To get a succession of them flowering in pots, they may be planted at intervals, from the earliest time at which they

can be bought, five, seven, or more roots in each pot. If they have heat, it should be very slight, and they will come forward nicely on the windows indoors. In planting them out of doors they should be put about three inches deep, and two inches apart: a wet poor soil does not do. Good roots are imported, and may be bought at any good florist's, and depended on, at from 1s. 6d. per hundred to 6d. per dozen. The roots should be taken up every second year, the large roots replanted, and the small offsets planted in a bed for two years.

To raise seedlings sow in October in an airy spot, in light rich earth, cover the seed to the depth of a quarter of an inch, and when the young plants grow up in the spring, only keep them clean from weeds, clear away the leaves when quite decayed, and spread a little rich light earth over the roots. Treat them the same for another year, and in September transplant them into fresh light rich earth, three inches apart, and in two years more they will flower, when good new sorts should be taken care of. The Autumn crocus, *Crocus sativus*, from which saffron is made, is very pretty, and worthy of a place in the garden: its flowers are violet. Most of the autumn flowering kinds are violet or purple, but some are white. The *C. Cartwrightianus creticus* is a pretty pale yellow, with fine large flowers, which come in October.

The Fritillaries are hardy bulbs, which are handsome either in pots or in the borders. They do best in sandy loam; the roots may be planted in autumn, taken up as soon as the leaves decay, and kept in a rather moist place until they are planted again.

Fritillaria imperialis, the stately Crown Imperial, is in three colours, yellow, dark yellow, and red: it grows very high, and is indeed a noble-looking flower. As it flowers in April, it may be used for a bed in spring, and the foliage will die off soon enough for the roots to be taken up to give place to later flowers. It should have a deep rich soil, well drained, and when the stems send out young shoots above the bulbs a top dressing of well rotted manure should be given, close round the

stem. When the bulbs grow large, they will produce two stems, each of which will perfect a bulb, and at the time when the roots may be taken up these may be planted apart.

The Crown Imperial will not do for pot culture, but the smaller fritillaries flower well in pots. Plant them in October, in light rich earth, four in a pot. Plunge the pots in ashes on a hot-bed, and protect them from frost, until they show bloom, and then place them in the greenhouse, or plant them in groups in the borders. Offsets are produced round the old roots, and should be taken off and planted in light rich earth every third year: there they may remain until they flower.

The pretty gold besprinkled Guernsey Lily, *Nerine sarniensis*, suffers from an undeserved bad character. It often flowers without earth, and therefore, for the curiosity, it has been allowed to do so; it often, from improper treatment, flowers but once, and then the bulb is done for; but with due care these bulbs will do well for years. They require a strong rich loam with sand, and when the root has produced flower late in summer it must be encouraged, by good soil and water, to mature leaves in abundance, otherwise the root will not be in condition to produce flower again the following year. Plant the roots in a rich, light, well drained bed, and there let them keep their place year after year. Manure the bed in spring, and in winter protect the roots from frost with litter or dead leaves. Without a vigorous growth of the leaves the bulbs will not prosper. They must be deeply planted, and the situation of the bed should be warm, and sheltered, and dry in winter. On a sunny bank, against the front of a greenhouse, I have known them do well, and flower for years. When they are grown in pots they should be planted deep, in light rich peat and sand, the bulb being well covered. They are chiefly increased by offsets, but they may be grown from seed sown in heat.

The *Anomatheca cruenta* is a sweet little bulb, producing a great abundance of bright red flowers, with a

low growth of grasslike foliage. It is hardy, and very suitable for vases, edges, or groups on flower borders. It likes a mixture of loam and peat. It is also pretty, gay, and lasting for pots in windows, or elsewhere. It flowers in July, and the moment the seed is ripe it should be sown, when it will produce bulbs, which will flower the next year. It is said to require protection from frost, but we have had pans of roots left out all the winter, without injury.

The *Dielytra spectabilis* is a charming tuberous rooted plant, fit for forcing in pots for early bloom, or for planting in good tufty groups, in any warm sheltered border. Its delicate and peculiar shaped flowers and prettily cut foliage, resemble those of the common fumitory. It requires a rich light soil, and is easily increased by division of the root, as in the dahlia, or by cuttings. It flowers in spring.

The *Leucojum*, Snowflake, or St. Agnes' Flower, is a sweet little white flower, of a pretty drooping habit, like the snowdrop, only larger, and growing several on a stalk. The roots increase abundantly, flower in spring, and do well for planting an aquarium. Sow the seed as it ripens.

The *Ornithogalum umbellatum*, or Star of Bethlehem, is a pretty flower, of a clear decided white, and quite hardy. It will do for years on the same spot.

The *Oxalis* is a tuberous root, of which there are many varieties, producing showy flowers of various colours—red, rose-colour, purple, and yellow. The culture is the same as for the ixia, and many of them require protection in winter. Most of them may be bought for 2s. per dozen or less.

The *Scilla* is a pretty bright-coloured spring flower, which is quite hardy, and will grow in any good garden soil.

The Winter Aconite is almost the earliest blooming of bulbs. It likes a light soil, and a warm open dry situation.

The *Zephyranthes* are Cape bulbs, which produce elegant flowers, one on a stem. Some of them are

quite hardy, and may be planted like crocuses on any warm border, and, like them, they must be taken up every two or three years. They like a somewhat sandy soil.

The sweet delicate little Snowdrop, *Galanthus nivalis*, will do what so few pretty flowers will do, thrive under the drip of trees. The double snowdrop is perhaps more taking, and the Russian snowdrop, with smaller flowers, is also pretty. Snowdrops like a light rich soil, and increase by offsets. They flower very early, and should be divided and replanted every four or five years.

The sweet and lovely Lily of the Valley also grows under the drip of trees, but it requires light. This pretty plant is very touchy, but where once it takes it grows luxuriantly. Only leave it alone, for nothing seems so much to interfere with success as digging among the roots. Where the roots take they will grow so abundantly that clumps may be taken and never missed. That rather favourite plant with many, the Solomon's Seal, is of the same family.

CHAPTER XV.

ANNUALS.

It is almost superfluous to mention that annuals are plants which grow up from seed and die in one year. Many of them can, however, be kept alive for a second year, and encouraged to grow large, by preventing their ripening seed the first.

Hardy annuals are those that bear our climate so well that the seed may at once be sown in the open border, from February to May, according to their capacity for withstanding the degree of frost which we often get in spring. A succession, for flowering later, may be sown even until the middle of June. Many kinds will

bear transplanting, but, as a general rule, it is best to sow the seed where the flowers are to remain. When seed is to be sown, the ground should be duly prepared by forking, manuring, and adding any other soil or fertilizer which the nature of the ground, and of the plants to be grown in it, may require. The spot to be sown may then be made firm and flattened by pressing it with the bottom of a flowerpot saucer, or other flat surface; then spread the seed, taking especial care that it shall not be thick enough for the young plants to come up crowded, cover it with fine mould, and put in a label. All kinds of tallies and labels are sold and used, but bits of lath, in six or nine-inch lengths, smoothed, painted, and written on with a pencil, do very well. If the seedlings come up too thickly they must be thinned to such a distance apart as their size when grown up will require; but as thinning, however carefully done, can hardly fail to do mischief to the plants left, sowing seeds thinly should be always attended to. To save the seed from being eaten by birds, a garden pot may be turned down over them until they are up.

Half-hardy annuals are those which must be raised indoors, or with the aid of heat, and protected from frost, but which will do in the open air with us in summer. Most of these are sown in a gentle hot-bed in March, April, or earlier. When they have a few leaves they are pricked out into pots or seedling pans, still kept in the frame, in a greenhouse, or indoors, and planted out when all danger of frost is past. Many flowers of this kind may be reared without difficulty on the windows or flower stands in a sitting-room or other rooms in a dwelling-house, safe from cold, frost, and too great change of temperature. In frost, if they are grown on a window seat or window ledge, it is sometimes necessary to remove them to the table in the middle of the room when the fires are put out, until they are lighted again. It is often a good plan to sow the seed so thinly in pots that each pot may make a clump for planting out. When the roots are so grown as to make a good ball of the earth in the pot, it may

be planted out without being broken, which will greatly facilitate the after growth.

Tender or greenhouse annuals require shelter and warmth at all times, but some of them will do in a warm sheltered spot out of doors from June until the nights get cold, and will even ripen their seed.

The same terms of hardy, half-hardy, and tender are applied to all plants; and in making selection from the excellent and valuable lists of plants and seeds which are sent out annually by Messrs. Carter and Co., of Holborn, and other first-class dealers, it is necessary to bear in mind that the plants, bulbs, seeds, &c., marked "hardy" will do entirely in the open air, that those marked "half-hardy" and "tender" must be raised with the aid of heat, and protected from cold and frost. In the protection given it is often necessary to guard against too much wet, as well as too much cold. This is especially the case with bulbs, and all of the carnation kind: many which are staunch against the cold of our climate succumb to its damp.

There are many annuals which, from being especially well adapted to bedding, have been spoken of in the chapter on bedding plants. As my little book is intended to help the *many* in planting and cultivating their gardens, its arrangement does not aim at science, but rather at helping the amateur in his work, and its chapters are made mainly with reference to this end.

Mignonette is of such constant utility in giving fragrance to the garden, and in filling up very prettily every corner that wants filling up, that it must come first among annuals. I believe it is not an annual in its own country, but with us it is generally treated as one, and is sown in the open ground in light sandy loam, well drained, and manured with leaf-mould, from the end of April to the beginning of July, keeping the whole garden fragrant until the frost cuts it off. If the seed be allowed to shed, abundance of self-sown plants will come up the following spring, and these should always be carefully spared, as they will be finer, and flower earlier than those from seed regularly sown. The soil

for it should be sandy for the perfume to be in full perfection.

To get pots of mignonette in flower in the winter sow seed in the open ground, or in pots placed where they will have plenty of air and light, in July. In September shift the young plants into the pots in which they are to flower. One plant to a pot, if fine, or three, if rather small, will be quite enough, and in moving them care should be taken not to disturb the earth from the roots. If the pots fill with root, re-potting into larger pots will make the plants grow fine. Before there is a chance of cold nights take the pots into the house, and keep them in a room without a fire until they have flower buds, and then they may be placed in a sitting-room where there is a fire, and with good watering every day, and preventing their seeding, they will keep in flower for months. Seedlings from seed sown a month later may be brought forward to succeed these, only keeping them safe from frost until they are brought forward to flower. By a similar process pots in bloom may be kept for the house all the year round.

The mignonette, as I mentioned before, is a perennial in its own country, and a little management in culture will, without difficulty, make a tree of it here. Sow seed the end of April in a compost of rich mellow loam, mixed with one-third of thoroughly rotted cow-manure, a little sand, and a little lime rubbish. Have as many small pots as you wish to have plants, place at the bottom of each some crocks, a little of the lime, and fill the pots with the compost; place three seeds in the centre of each, just cover them with earth, press them down tight, and water them. Place the pots in a window, or in a cool greenhouse, and do not force them, but let them have plenty of air. Water every morning with a fine rose, and when the days are fine enough put them out of doors for a few hours. As the little plants grow strong, pull up all but the finest, put a stick a foot long or more against it, pressed down to the bottom of the pot for steadiness, and train the plant to it, as it grows tall, with slight ties of worsted. Stop all side shoots at

the second joint, and nip off all the flower buds before they bloom. The second year cut back the side shoots closer, beginning at the bottom, and going up gradually week by week, and continue to train the plant up tall. As the pots get full of root, re-pot the plants, on as far as August, not later. Of course they must be kept from frost in winter. When they are one year old the stems will get woody, and before they are three years old they will be shrubs, and will bloom well for many years.

There is a larger flowered mignonette, which is, I believe, only the result of cultivation.

For hardy annuals we have Venus's Looking-glass (*Specularia perfoliata*), producing its purple flowers in spring and early summer. It likes a rather sandy soil.

Convolvulus minor produces a good mass of blue in spring, and the *Nolanas* are similar to it in character, with purple, violet, blue, and white flowers. They will grow in any good garden soil. *Calandrinia umbellata* grows freely in any garden soil, and produces its crimson flowers, close to the ground, in June, and flowers for a long time. The colour is brilliant, and there are other pretty *Calandrinia*, growing rather higher, of other colours. The plants will flower earlier if raised in gentle heat, or under a hand glass. *Cacalia*, scarlet and yellow, are useful plants of free growth. Sow the seed in the borders in April.

The *Calliopsis*, or *Coreopsis*, is a summer-flowering showy annual, the several kinds of which are of various gay colours, and are useful from remaining long in flower, especially if the seed be nipped off as soon as the flower drops. Sow the seed in March, and protect by a turned down garden pot over each clump; or sow the seed on a hot-bed, and plant out the young plants where they are wanted, when they are large enough. The different kinds grow from one to three feet high, and they do in a light sandy soil. The seed may be sown in autumn, and will then flower earlier. Some of them are perennials, and they may be increased by division of the root.

The *Callichroa platyglossa* is hardy, with bright yellow

composite flowers, the seed of which may be sown in March, in a slight hot-bed, or under a hand glass, or in the open ground rather later. The *Cladanthus Arabicus* produces its dark yellow flowers in July, and keeps long in flower. Sow the seed in April. The *Cladanthus canescens* is a greenhouse evergreen, producing its yellow flowers in June, and is propagated from cuttings under a glass.

The Clarkias are pretty pink and white flowers, of delicate form, from one and a half to two feet high, flowering abundantly from June to the end of summer. The seed may be sown in March or in September, and protected through the winter, to bloom early. The Rose of Heaven (*Viscaria cæli rosa*), with its pretty rose-coloured flowers, and several of the same family, producing pink, white, and scarlet flowers, are profuse bloomers, fit for beds, edgings, or groups. Sow the seed in the border in April; or in a warm dry sheltered spot in September, to stand the winter and flower early. *Schizopetalon Walkeri* is a low growing, cruciform, white flower, very fragrant, and thriving in sandy loam and leaf-mould. *Eucharidium concinnum* are low growing, free blooming, hardy annuals, flowering from spring to autumn. Sow in September, March, and May, to keep up a succession. The Eutocas, of several kinds, are free blooming annuals of various colours. The seed may be sown in April, and the plants must be far apart to give plenty of air, or they will not thrive.

The *Hibiscus Africanus* is an annual, growing two feet high; to bring it forward early it is best to give the seed a little heat under a glass, and to put out the young plants nearly a foot apart, in May.

The Candytufts are low growing annuals, biennials, and evergreens, with cruciform flowers, most of which are white. They may be sown in autumn, to stand the winter, or in the spring. The *sempervirens*, and all of its class, may be grown from seed or cuttings. The Kaulfussias are low growing and pretty, the different kinds having blue, dark violet, and rose-coloured flowers. Seed may be sown in the borders in April, but it is

better to sow in March, and give a little heat. The pretty composite flower comes out in June or July, but it does not last very long.

Lupines are of all colours and all heights. The seed is sown in the ground in February or March. *Mutabilis* and *M. Cruickshanki* are splendidly branching plants, which, if sown early in autumn and kept in a frame for the winter, make fine plants. The perennials are good bushy plants for a large garden, and are increased by seed, or division of the roots. Love in a Mist (*Nigella*) is hardy, compact, and pretty, something like larkspur in habit of growth; the different kinds producing flowers of various colours. The seed may be sown in the open ground after the middle of March. The *Collinsias* are pretty, and may be treated like *Coreopsis*. The Pheasant's Eye (*Flos Adonis*), so pretty from the way in which the bright crimson flowers peep from amongst the feathery foliage, grows from seed in common soil, and flowers from summer into autumn. The *Adonis* has other sorts, several of which are perennials, and are increased by division of the root or by seed.

Ten-weeks Stocks fully deserve attention from their beauty and fragrance. Such fine varieties and colours are grown from the German and Russian seed supplied by first-class seedsmen, that it is better to purchase than to save seed. Use vegetable loam, with one-sixth part of river sand; sow from March to May for summer flowering, and in August and September to stand the winter and flower early. Sow the seed far apart and only thinly covered, and place the pots near the glass. When the young plants get several leaves each, they may be potted singly, or planted out in groups or beds. To get fine plants it is best to plant them out in pots, and turn them out into the borders when the pots have good balls of root in them. Stocks like a chalky soil. It is said the strongest seed is most likely to produce double flowering plants; therefore, leave very few seed pods on a plant, give it high cultivation and plenty of sunshine.

The Brompton Stock is a splendid plant when it is well grown. It is a biennial; the seed should be sown far apart, in a rich light soil, early in May, not in too hot a place. As the young plants grow, water them every evening with a fine rose; they should be as much as six inches apart. When a month old some should be removed with good balls of earth to the roots, and carefully planted, so that all may be quite a foot apart. If the tap-root be disturbed in the removal the plants will not do after. In the following March or April make in the borders, where the stocks are to be planted, beds two feet deep, and two feet every way, of rich sandy loam, enriched with leaf-mould or the remains of an old hot-bed, and transplant the stocks with large balls of earth, undisturbed. They should be shaded for a little time, and watered every night until they flower.

China Asters, which are increased to an almost endless variety of Chinese, German, quilled, globe-flowered, pyramidal, French bouquet, dwarf, &c., are valuable from producing a gay abundance of rich-coloured bloom when flowers begin to get scarce, in September and October. You can hardly give them earth which is too rich, and from the seed-pans onward they must have plenty of air and room. The seed may be sown on a hot-bed in February or March, the young plants pricked out when they have a few leaves each, and planted out in May. Seed may be sown, not too thickly, in the open ground in April. First-rate seed may be bought. Those who save seed themselves should take it only from the best flowers. Self coloured should be clear, distinct, and bright, and the flower should be fine in shape, very double, regular, and well quilled. The striped flowers should have the colours well defined and sharply marked.

I have made my list of hardy annuals (from a few inches to two feet high), rather encroaching on the space allotted to the chapter on annuals, because it is they which are needed in the greatest number and variety in filling the flower garden; and the tenderer kinds are of much less general utility. For hardy annuals of tall

growth we have the Sunflower, one new variety of which, *Helianthus macrophyllus giganteus*, is mentioned as growing twenty feet high. The sunflower plants will be the finer if they be grown in a slight hot-bed and planted out. The perennial sunflower is a good shrubby plant to place where a large yellow flower is wanted; it is increased by division of the root. The Jerusalem Artichoke is of the same family. The *Convolvulus*, our old twining favourite, so splendid in its abundant though short lived flowers, has many rare and showy kinds comparatively recently introduced. Most of them require heat to raise the seed.

The *Salpiglossis*, of several varieties, are delicately veined, rich coloured flowers of great beauty. They require a light rich soil, and may be sown in autumn, and protected through the winter or in spring. They are only half hardy; if the seed be put in the open ground it must not be till May. The different varieties grow from one to two feet high, and produce flowers of various colours, scarlet, purple, blue, sulphur, &c., from July to autumn. The *Mesembryanthemums* are half-hardy annuals, which must be raised in a greenhouse or on a hot-bed. Pricked out in May in a sunny spot, with a sandy soil, their delicate bright green foliage, covered with ice-like little globules, looks refreshing and nice. *Nemesia compacta*, and other varieties of the same, are pretty, free blooming, half-hardy annuals, with flowers of pure white, blue, violet, or pale pink, according to the variety. They must be raised on a hot-bed in spring, and planted out the end of May or June. They flower in June, grow close to the ground, and keep long in bloom. The *Helichrysum*, with its various varieties, is an everlasting, which is very useful for winter bouquets. They may be raised on a hot-bed early, or later in the open border. *Acroclinium roseum* and *Roseum album* are also half-hardy annual everlastings, which, raised on heat, will grow freely in the garden. The *Xeranthemum* is a pretty purple everlasting, which is quite hardy. There is also a white one.

The *Daturas* are showy half-hardy annuals, two and three feet high, with flowers of very large size. *Wrightii* has blue and white flowers, delicately shaded; the flower of *Chlorantha* is golden yellow, very large, double, and richly scented. The young plants should be raised on a good hot-bed, potted off into good loam and leaf-mould, and planted out late in June.

The Snake Cucumber (*Cucumis flexuosus*) is curious from the snake-like form of its fruit. It must be raised in heat, and grows remarkably fast. The Snake Gourd (*Tricosanthes anguina*) is similar to it; they are only curious. Of a like kind are the Caterpillar Plant (*Scorpiurus*), with yellow pea-shaped flowers, and seed-vessels resembling caterpillars, and another annual flower, the seed-vessel of which is like a snail.

Honesty (for the beauty of its seed-vessel), Sweet Peas (raised in pots and turned out when the pots are full of root), Prince's Feather (*Amaranthus hypochondriacus*), Love Lies Bleeding (*A. caudatus*), and *Amaranthus melancholicus*, with its deep red foliage, deserve a place. Nor need the gay Poppy, the pretty pink Hawkweed, the unobtrusive Virginian Stock, and many others, be forgotten.

We must not leave the annuals without a few words about Balsams, those pretty delicate plants, the beauty and luxuriance of which depend so very much on culture. Those who wish to have fine balsams, unless they happen to possess good seed, should buy the best which can be obtained, in order to secure fine double flowers. Sow the seed in a good hot-bed, and when the young plants are ready to be pricked out prepare some light rich soil for their use. The little plants being three inches high, plant them out singly in small pots. Never let them get pot-bound, but when the roots are sufficiently grown, re-pot, using richer earth to fill up every time, and giving free air in abundance, and water as required. Nip off the buds, and carry on the shifting until the plants are in eight, twelve, or sixteen-inch pots, according to the size you wish to attain. If the plants grow fast, they will want re-potting about once a week, and the pots may

be plunged in a hot-bed of 75° temperature. When the plants are well grown, harden them by degrees, and allow the flower buds to grow. The seed should be chosen from the finest flowers, and should be from one to three years old; the older (in moderation) the better. The plants like plenty of air, light, and water, and the slightest wound will destroy them. The flower should be large and double, and distinct in marking, like a carnation.

That handsome rich-coloured flower, the Cockscomb, may be treated in the same way; and also the pretty greenhouse annual, the *Rhodanthe Manglesii*.

CHAPTER XVI.

PERENNIALS AND BIENNIALS.

ANNUALS, with their absence one portion of the year and untidiness at another season, we might do without; and even bulbs, with their temporary splendour, could, perhaps, be dispensed with, although we should much miss their brightness among flowers; but the ever varying yet ever constant beauty of our innumerable perennials, handsome in foliage for so large a portion of the year, even when their flowers are off, we should miss more than any other class of plants. With them in abundance we could manage to cultivate a flower garden satisfactorily; without them it would be difficult indeed to maintain for it a home-like face.

The Hollyhock is useful from its towering noble growth, and from the great diversity of its flowers, including most colours, in all tints, from good white to almost black. It delights in a rich strong soil; so, unless the earth of the garden be of this nature, it is best to make a bed where a hollyhock is to be planted, two feet every way, of strong loam, enriched with

thoroughly rotted manure, and in this to plant the roots, singly, or in threes, after leaving the earth some days to settle. When the plants begin to grow well, mulch the roots with light manure to protect them from drying winds and to strengthen the flower stems. When the weather is dry, water liberally once a week, train the stems to stakes, tying them very loosely, and just top the flower spikes. Cut down the stems as soon as the seed is ripe and gathered, fork the ground, leaving the surface rough to mellow, and give a dressing of well rotted manure. Before frost comes mulch with half decayed manure, drawing it up to the roots to keep off frost, and manure the surrounding ground. In a damp place, or if the soil be *too* rich, the hollyhock will sometimes be struck with sudden disease and die; in this case, renew the earth before planting another, and make cuttings of any healthy young shoots that can be saved.

For cuttings take young shoots at the base of the flower stems, plant them round the edge of a pot filled with moist sandy loam, press the earth close to the bottoms of the cuttings, and fill up the holes. Place a frame on a gentle hot-bed, and within the frame a layer of sawdust five inches thick; sink the pot in the sawdust nearly up to the rim, and give no water, or the cuttings will damp off. Keep the frame shaded, and open it a little at the back for an hour every morning. In six weeks or so they will show if they will grow, and then they may have a little water, given with care, not to wet the leaves. When the roots are grown, pot them off, keep them shaded in a cold frame for a fortnight, gradually harden them to bear sun, plenty of air, and constant moderate watering, and they will then be ready to plant out, which may be done in the spring or in August.

Large roots may be taken up after flowering, and divided with a knife. Take care that each division has plenty of root, and at least one good shoot, and plant them in a place which is shady but not overhung, and there let them remain until March.

Save seed from the most double and finest flowers, and keep it in a dry place until March. Sow early in

March in gentle heat, in shallow seed pans, and when the little plants are large enough to handle, prick them out three inches apart, either in a bed of rich earth or in large pans. When the weather is fine and settled, remove them with plenty of earth to the roots, plant them two feet apart in a bed prepared for them, where they may remain and flower. When they flower discard all that produce single bad-shaped flowers; cut down, name, and mark all that are good, and plant them where they are to flower the next year.

The *Campanulas* are fine showy hardy plants, which are most useful in a garden from the abundance of their handsome flowers. Some of them grow very tall, and the *Campanula pyramidalis* (the chimney companion of cockney gardeners) may be encouraged to an enormous size by repeated re-potting, preventing its coming into flower for two years, and very rich soil. It produces its immense quantity of fine blue flowers the beginning of summer, and keeps in flower a long time. It and all the perennial campanulas are increased generally by division of the root, but they may be raised from seed, and they like a rich garden soil.

C. cinesia and *C. uniflora* are beautiful little campanulas, which grow quite close to the ground, and are covered with their pretty blue flowers during June and July. *C. carpatica*, *C. rotundifolia*, *C. garganica*, and many besides, are also of rather low growth, and summer flowering. All these make pretty bedding plants, from their good-looking foliage and most abundant flowers. *Campanula medium*, the Canterbury Bell, is one of our freest blooming biennials, giving to the gardens splendid blues of all degrees of intensity, pure masses of white, and double flowers, both white and blue. *C. speculum*, Venus's Looking-glass, has been already mentioned as an annual: several other names have been given to this pretty flower.

The campanulas are so pretty that many of them are quite worthy of culture in pots, and the roots of all are said to be good to eat.

The Columbine (*Aquilegia*), from the peculiar form,

abundance, and graceful set of the flowers, the variety of its colours, and for its pretty foliage, deserves to be much more generally cultivated than it is. The seed keeps long, should be sown in March, in sandy soil, under glass, and the young plants will often flower the same year. The Columbines are quite hardy, grow from one to two feet high, come into flower in May, and flower for a long time. The roots may be divided in autumn or spring.

The Snapdragons (*Antirrhinum*) are hardy, easy to cultivate, and have an almost endless variety and mixture of colour. They will do in any garden soil if not wet, grow about two feet high, or a little more, flower in June, and keep in flower all through the summer. Good sorts should be propagated by cuttings, as seedlings generally vary from the parent plant. Great variety in colour may be got from seed, which should be sown in spring: the young plants have the advantage that they flower the same year.

The Foxglove is a handsome growing flower, which makes a good mass of colour wherever it happens to be wanted, and offers a fine pure white. The seed should be sown in the autumn, that the plants may flower the next year. *Digitalis Canariensis* is a handsome plant from Teneriffe, producing yellow flowers; it is a greenhouse plant.

The Veronicas are fine showy, hardy plants, producing blue, purple, and white flowers in summer. They will grow well in any garden soil which is tolerably light and moist. They are increased by seed and by division of the roots.

The Wallflower, *Cheiranthus cheiri*, is gay and very hardy, and especially valuable from producing its deliciously fragrant flowers early, and retaining them long. A light, rich, sandy soil suits them best. The fine double sorts must be propagated by cuttings, under a hand-glass, in May or June. The double yellow, double blood-red, double purple, and several others, are handsome, but they have not the fragrance of the common single sorts. *Cheiranthus Alpinus* is a pretty little hardy

plant, fit to grow in pots, or on rockwork. *Cheiranthus mutabilis* requires a hot-house. Wallflowers grow very readily from seed.

The Cistus, or Rock Rose, is very pretty, grows freely in a mixture of loam and peat, and is easy to increase by cuttings, under a hand glass, by layers, or from seed. Many kinds, of low growth, do nicely for rockwork, but these are only half hardy, and will require a little protection during severe winters. In case some may die it is a good plan to take some cuttings of these, and keep them in a cold pit. The Gum Cistus grows four feet high, and produces its pretty white or spotted flowers in June. The purple flowered is another pretty kind, of medium height.

The Hydrangea is a handsome plant, from its bold foliage, bushy growth, and large balls of delicate coloured flowers of the palest tint of pink or blue. The blue flowers are a sport, and when a plant bearing them is moved to a new locality it will often fly back to pink. Hydrangeas are very handsome and ornamental in pots, and out of doors they will stand our winters in very warm sheltered spots; but when less favourably placed they must be protected. They like moist sheltered places, and do not mind the drip of trees if the situation be warm. If the roots be protected with manure, the plants may be cut back to them, and will shoot out again and bloom late. They may be propagated at almost any time by cuttings of the young side shoots two or three inches long, in sandy earth with a little heat. The old stems strike anywhere, but take more time. It is said the loam of Kenwood, Hampstead Heath, Stanmore Heath, the peat of Wimbledon, and from some of the bogs near Edinburgh, produce the beautiful tender blue flowers, and I have known them do well in earth almost entirely composed of leaf-mould. Watering with water impregnated with alum, steel-filings, sheep-manure, wood-ashes, peat-ashes, nitre, carbonate of soda, common salt, and tan, have all been tried with more or less success. The plants should be cut back when they have done flowering.

The Mimulus, or Monkey Plant, is a gay flower, either for pots, or for planting out in the borders. There are many hardy varieties which are perennials, and which flower abundantly throughout the summer. Any soil will do, but a light, rich, moist soil suits them best. Roseus, and a very few others, are half hardy, and require to be removed into a pit in winter; but if their seed be sown in March they may be used as annuals, and will flower well in summer and autumn. A few are annuals. The Musk Plant is a Mimulus, which dies down in winter, and comes up again year after year; its pleasant scent, bright tender green foliage, and pretty yellow flowers, render it attractive. This, and all the tribe, want abundance of water. The name of Monkey Plant is from the form of the seed. The *Diplacus* is a Mimulus of a shrubby growth. *D. glutinosus* has orange, *D. puniceus*, scarlet flowers. All are natives of California, and it must be remembered, with regard to all plants of that country, that they are easily killed if the sun strike on the collar of the root. Propagate by cuttings taken when they are getting firm at the base, in April. Plant them in sand under a bell glass. These plants must have a little protection from frost in winter.

The Heaths are not useful in the garden, but they are nice greenhouse or window plants, though often disappointing. In potting, the collar of the root is sometimes put too low, which makes it rot. Water regularly, never letting the plants be either sodden or too dry, and never subject them to a cold position nor a hot sun. Heaths grow well in three parts peat well pulverized, and one part silver sand, and the pots should be well drained. The pots should have no saucers, and should be watered twice a day, over head, in summer, and have plenty of air; in winter, once a day for watering is enough, and less air, but a little even in slight frost.

The *Monarda didyma*, or Oswego Tea, and *Monardas* of other varieties, are rather tall-growing plants, producing showy flowers throughout the summer. They thrive in a rich light soil, and are increased by division

of the root. I have seen somewhere that the *Monarda didyma* produces the scent called bergamot.

The pretty little *Hepaticæ*s deserve a place in the flower garden, on account of their showing their gay-coloured flowers early, while flowers are yet scarce. They require a light sandy soil and a shady situation. They should be taken up, divided, and replanted every second or third autumn, for if the roots rise above ground the plants are very likely to die.

The Garden Rocket, *Hesperis metronalis*, is a tall-growing plant which requires good cultivation to make it grow fine. When the plant has done flowering, it should be taken up and transplanted into fresh, very rich, light friable soil; the earth from an old celery trench is good for this purpose, and under this treatment the double white and double purple rockets grow to be very fine flowers.

The St. John's Worts, *Hypericum*, are especially valuable from growing well under the drip of trees; in fact, they prefer moisture and shade, where their rich green foliage and bright yellow flowers show very well. They grow from seed, and may be propagated also by division of the roots.

The *Gentiana Acaulis*, or Gentianella, a low-growing plant, with blue flowers of intense brilliancy, is beautiful for a border. It, and all the gentians, require abundance of free air; they will not do in the neighbourhood of London, or any similar locality. They like a light rich soil, and do well in a mixture of loam and peat, enriched with vegetable mould; *acaulis* may be planted in peat alone. Some of the gentians are perennials, and may be propagated by division of the roots; and some are annuals, which, as well as the perennials, may be raised from seed, which must be sown directly it is ripe. The root of *Gentiana lutea* is an intense bitter; the gentian of the druggists. When grown in pots a little heat does good.

The Solidago, or Golden Rod, is quite hardy, with yellow feathery flowers. There are many varieties, which are showy tall plants for the back of a border, flowering

from summer to late in the autumn. They may be increased by division of the roots in spring, and where they once grow there is danger of their becoming too plentiful.

The Sweet Scabious, or Widow's Flower, is valuable as one of the darkest coloured flowers we have, and it is sweet in scent. It is quite hardy, and grows freely from seed. There are also some with white and pink flowers.

Saxifrages of different varieties are hardy, of the easiest possible culture, and will grow in the neighbourhood of London or almost anywhere else, and in any light garden earth, although they prefer a deep sandy soil. *Saxifraga umbrosa*, the pretty delicate London Pride, and *S. granulata*, the mountain saxifrage, are especially useful for the front of beds.

The Calla, once called an Arum, will do in the open air only in very warm situations, but where it will do it makes handsome clumps, being ornamental alike in foliage and flower. It likes rich light sandy earth, and when in pots frequent watering, and it is increased by offsets from the fleshy root.

The Black Helebores, or Christmas Rose, is pretty, and valuable from flowering in winter. It is hardy, will grow in a shady place in common soil, and is propagated by seed, or by division of the plant in spring. There are several varieties of the helebores, with flowers of different colours.

Some of the Genistas are hardy enough to do well out of doors, and others are pretty in pots for the greenhouse or window. The half-hardy kinds are easily struck in sand under a bell glass, and the hardier may be grown from seed. Common loamy soil suits them. Their bright pea-shaped flowers make them very gay.

The Everlasting Pea, *Lathyrus latifolius*, that vigorous growing climber, with its large bunches of gay pink flowers, is useful for covering, year after year, an unsightly paling or similar object, and will grow to six or eight feet high. Lord Anson's pea, *L. Magellanicus*, another perennial sort, is pretty in foliage and in its

bright blue flowers. The Tangier Pea, *L. Tingitanus*, is a tall-growing annual with purple flowers ; and *L. grandiflorus*, or large-flowered, is also handsome. *L. odoratus* the well-known Sweet Pea, one of our sweetest annuals. The annuals are grown from seed sown in spring, in common soil, and the perennials are increased by division in spring, or by cuttings of the young shoots, struck under a bell glass.

The Peony and the Moutan, or tree peony, are ornamental both in foliage and in their large brilliant flowers. They are of various colours, and interesting varieties may be got by crossing. For obtaining new sorts, the seed should be sown in September ; some may come up the following spring, others the spring after. Common peonies may be increased by division of the root ; the tree peony by division, by grafting on the roots of the other, or by cuttings of young shoots taken in spring, and struck under a hand glass, with a little heat. It is also grown from suckers and layers. The tree peony must be protected in winter and spring ; it does well for forcing. They flower in the spring.

The *Obeliscaria pulcherrima* is such a gay flower that it should have a place in every flower garden, especially as a few pennyworth of seed may be bought ; it is hardy, and will grow in any garden soil. It grows about two feet high, with rich crimson flowers, edged with yellow. It flowers in August, and lasts in flower a long time.

The large and small Periwinkle, *Vinca major*, and *V. minor*, are especially useful and valuable for covering shaded banks, which they greatly ornament with their rich green foliage and bright blue flowers. It is well that we may use so pretty a plant under the drip of trees, where so few things will prosper. The variegated foliaged periwinkle is pretty, and it, too, produces bright blue flowers in great abundance. These trailing plants like a soft moist situation, and increase plentifully by runners, which strike root at the joints, like strawberries. To make the plant produce seed, it must be grown in a pot, and not allowed to throw out runners. It is an evergreen. In *Vinca rosea*, the flower is rose

coloured, in *V. rosea alba* it is white, and in *V. ocellata* it is white, with a red eye.

Was there ever a child who did not think it the glory of his or her life to get a root of double daisy, whether to be planted in the juvenile garden, or placed in the nursery window, over the crowded thoroughfares of England's great metropolis? Let us, therefore, in memory of our early favourites, make room for double daisies—white, pink, red, quilled, and hen and chicken. These pretty flowers are more cultivated in other countries than in ours, and M. Van Houtte, of Ghent, has more than twenty varieties in his catalogue. The daisy makes better edging than almost any other plant except box. To make the roots grow strong, and improve the flower, the plants should be taken up and divided every year. They thrive in loam, richly manured, and when they are replanted the ground should be dug and manured. They make good beds in an emergency, and can be removed to make room for later bloomers when they go out of flower. Wireworms are so fond of them, that they are said to leave carnations and pinks and other choice flowers to go to them. New sorts are raised from seed.

Violets can scarcely be too abundant in the flower garden. The common sweet-scented violet is one of the most delightful wild flowers of our country. White violets generally grow in chalky land. The Neapolitan violets flower in winter, and are very sweet. The Russian violets also flower in winter; in a warm sheltered spot, these will be in bloom and fragrance from autumn to spring. Violets out of doors want to be planted on a bank (they will not bear *stagnant* damp), in a shady place, in a rich light peaty soil, where they will have moisture. Ashes from the bonfire, or any charred articles, make good manure for them.

Enotheras of different varieties, and many other fine perennials, took their place as bedding plants before it came to the turn of perennials to have their chapter.

The Pentstemons are nice showy flowers for bed or border. Seedlings will flower the year they are raised.

Several of them require in winter the protection of fir boughs or moss among the plants, from London northward, and with such it is best to make sure of saving the kind, by making cuttings to keep over the winter, in a frame. To propagate, divide the plants in the spring, when the growth commences, or take cuttings of the young shoots any time in spring, summer, or autumn, and strike them under a hand glass, in a mixture of sandy loam and leaf-mould.

There are many other useful perennials well deserving attention. The Spiderwort (*Tradescantia*), with its rich purple flowers, golden yellow anthers, and sweet scent, the Michaelmas Daisy (that intruder so difficult to keep within bounds), the Rose Campion, Feather Grass (*Stipa pennata*), Balm of Gilead, the common Ribbon Grass, showy in garden and nosegay, all come in well in helping to keep up a good variety as to heights of various plants for different positions on the borders, time and habit of flowering, and colour of the flowers.

CHAPTER XVII.

GARDEN ADJUNCTS—THE GREENHOUSE AND THE WINDOW.

To keep a garden well supplied with plants, and to furnish a succession when needed, some facility for providing plants to be ready for planting out as they are wanted is almost a necessary to the amateur florist. Without such convenience it will be late in the season before we can have the flower garden in full vigour of vegetation and gay with flowers, because our springs are often chilly, and our seasons backward, and plants, even of the hardy kinds raised in the open borders, will necessarily be many weeks behind those which can be reared in a greenhouse, in a pit, under a frame on a hot-bed, or inside a window of the dwelling-house. In most parts of England, too, fuchsias and geraniums, and

all the vast catalogue of half-hardy plants so necessary to fill the garden in summer, must be taken up in winter, often requiring scarcely any care beyond mere housing until the settled warmth of spring renders it safe to adorn the beds and borders with them again.

Making young plants from cuttings creates another urgent need for indoor storing places, if we want to keep the flower garden supplied without great outlay in buying fresh plants every season.

A greenhouse without artificial heat is sufficient for most useful purposes, to aid the flower garden by raising seedlings and cuttings of all common, and of most half-hardy plants, and by keeping a sufficient number of plants alive through the winter. Now that glass is so much cheaper than it used to be, a little greenhouse may be made for very small cost, and agricultural papers teem with advertisements, highly illustrated, to set forth plans and prices to suit all purchasers. If the greenhouse be so placed as to be entirely for utility, it may have a pit in which to make a hot-bed for seed and cuttings, or sinking pots requiring heat, or it may be fitted only with shelves and stages. The frost should be kept out; the thermometer should never go below 35° , which it is often difficult to prevent in severe winter nights. It would be a superfluous reminder to say 32° is freezing point. Many plants for which we especially want a greenhouse to help the flower garden will bear several degrees below that, but any simple contrivance of covering the glass, linings of manure, or burning a lamp (with the glass shaded), to keep the warmth up to 35° , will render the aid of the work to be done by the greenhouse all the more valuable. It must have good light, means of giving plenty of air, and the aspect should be south, south-east, or south-west. For keeping plants growing the temperature should not get below 45° . Between the cold of night and the warmth of day, sometimes, of course, aided by sunshine, there may be a rise from 10° to 15° . In summer give plenty of air.

Watering should be done seldom in winter, and early in the day, but not too early in the morning. Let the

temperature of the water be from 5° to 10° higher than the minimum temperature of the house, and give it in such a way that it may reach every fibre of the plant's root. As to time of watering, do not let the plants die, for want is, perhaps, the only rule that can be given; they may not want it above twice a month, and they may want it much oftener.

In the chapter on tools I spoke of frames and hand glasses. Hot-beds for using in conjunction with them may be heated by means of hot water, but any heating medium of this kind, requiring periodical attention at all times and in all weather, will be found too troublesome to those who do not keep a regular gardener; to them heat arising from fermentation will be much better. The medium may be dung, decaying leaves, or tan in a state of fermentation. As the manure is removed from the stable it should be thrown into the pit or in a heap; in a week it will have heated, and must be turned over, and the lumps broken and mixed in with the rest. Water the mass until it is all equally moist, and in four days water again. After a few more days turn it over and water it again, and after lying a week more it will be about fit for use, but another turn over would do good—mixing in leaves, refuse straw, and any garden refuse there may be. When the manure is sweet for use a handful from the centre should have a mushroomy smell. The bed may then be made on a spot open to plenty of sunshine, and sheltered from strong drying winds. In small gardens, where a hot-bed much raised would be unsightly, a pit may be dug for the manure, and this has the advantage of not letting the bed get so dry as it does when entirely raised above ground. The dung should be from two to four feet high before it settles, according to the bed wanted and the quantity of manure at command. The bed for raising tender annuals and striking cuttings must be level on the surface, or slightly sloping to the south, and six inches of light rich earth should be evenly spread over the surface, in which the seeds may be sown and the cuttings planted, or the seed and cuttings may be in pots plunged in the bed.

For some little time after the bed is made, its heat will be too great for vegetation; four days after making, it should be watered, closed up for another heating, and watered again before spreading the mould on the surface. When the bed has been in use some little time, and the heat declines, it may be renewed by what gardeners call lining. This lining, by somewhat contrary rule, is some heating material packed round outside the bed. Fresh manure may be used, and gardeners often use for the purpose the cuttings of the lawn: it should be laid round the bed eighteen to twenty-four inches thick. If the manure of the hot-bed be sunk, a trench must be made to sink the lining to equal depth, that the heat may be renewed throughout the whole mass. If a second renewal of heat be required, this lining may be removed, and a new one put.

Tan or tanner's bark, as a source of heat, requires frequent stirring and renewing. When the bark is brought fresh from the tanyard it may be lightly thrown together under cover, gently moistened, and turned over twice a week. About four weeks in warm weather, or five in colder, will suffice to make the fermentation general and regular. It will keep its heat for several months, and when the heat declines (it will do so sometimes without apparent cause) the tan must be sifted, the dust removed, and fresh tan added. Sometimes turning over and wetting the old tan will do. It is well to mix old and new tan together to make a new tan bed, the quantity of new must depend on its goodness, and on the heat required. Two-thirds new and the rest old, almost decayed to mould, should produce a bottom heat of about 85° . If the old tan used have heat left in it, a smaller quantity of new may be added to make a new bed, and the heat may be renewed afterwards with much less. Forking up will answer the purpose between whiles. Five-sevenths of the pit may be filled up with the new and old tan in a state of fermentation, and the remaining two-sevenths with old tan, without heat, in which to sink the pots.

Some facility for using artificial heat is almost a

necessity to avoid the alternative of being very late with flowers for the beds and borders, or buying largely, which, of course, comes expensive; but very humble appliances in the way of hot-beds may be made to go a long way. I have even known a hot-bed, made in a box or large pot, do a great deal in raising seedlings and striking cuttings.

A warm south border of rich light earth, to be used as a nursery, will be found a most useful accessory to the flower garden. This may be used for raising seedlings, for pricking out young plants until they are large enough to take their place in the beds or borders, and for undeveloped flowers to have a place wherein to remain until they show the worth or worthlessness of their bloom. A border in this nursery with cooler aspect will also be found valuable, in which to strike cuttings in the shade. A little reserve ground of this kind is often useful to resort to for the supply of plants for the flower garden, to take the place of any to which accidents may happen, and to fill up vacancies.

Another little reserve ground for collecting, mixing, and keeping composts, in any out of the way dry corner will amply repay the cultivator. Of course it must be screened from view, which may easily be managed by a hedge of some quick growing plant: it should not be too much shaded from sun, and if there can be a tank for receiving the draining, that will hold a valuable supply of liquid manure. A little bit of ground around or by the side of the tool-house will do best, as it will keep all the garden appliances handy and together, particularly as guano and other fertilizers that wet would injure, must be kept under shelter. It will be very useful to have reserve stores of composts and manures of different strengths and kinds, for valuable plants are often sacrificed for want of the proper earth at hand at the time of potting or planting. Where the arrangements are on an extensive scale it has been recommended to keep all the earths and manures under sheds, and dung in watertight tanks, for the purpose of preserving the liquid portion with it. Where luxuriant

development of foliage is desired the compost can scarcely be too rich in manure, but if flowers and fruit be the object, excessively rich earth will defeat that end, and the flower buds will pass into leaf buds. Composts are made from strong tenacious loam, half-rotten leaf-mould, heath soil, horse-manure, cow-manure, charcoal, wood-ashes, bone-dust, sand, turf, *scalded* moss, and other items, and some of them are the better for being years old before they are used, as I have mentioned in former chapters, especially in that on florists' flowers. When the bit of ground is appointed the sooner it can be made available and put in commission the better. Capital composts, fit for plants of various kinds, have been described, and the sooner preparation for mixing them can be made by laying up turf and other components to rot and mellow, the better the garden work will henceforth proceed. So many good composts have been described when the flowers for which they are fitted were spoken of, that it would be superfluous here to say more than to recommend the amateur florist to begin *at once* to make reserve heaps of some of the most generally useful mixtures.

If greenhouse, hot-bed, frame, and all appliances of the kind be quite beyond reach, although I do not see why any one who can, *in propria personá* or by deputy, hold a hammer and saw and use nails, should be without a frame, or any one with four feet square of earth to spare do without a hot-bed (I would rather with a feminine inefficient hand knock together a frame than do without one); garden-pots on window ledges may be made to do something towards rearing young plants from seed to be ready to plant out earlier than they would be if raised in the open ground. To remind us what may be done in windows, we need only remember that Spitalfields weavers, with the smoke of the heart of London against them, have been auricula and polyanthus fanciers. We once took a house in the suburbs of London, the half-quarter before Midsummer, the garden of which was a bit of virgin land, from a pasture of centuries standing. We had no greenhouse, no hot-bed,

no appliances of the kind of any sort, and we wanted to see the garden gay and tidy, as soon as it could be dug and laid with paths. Our only appliance for rearing plants from seed was a table for garden pots, placed against a window of tolerable aspect, and there we reared plants enough to fill the garden (with the aid of a few purchases) by the time it was ready to be planted. Elaborate directions on window gardening have been written in the *Cottage Gardener* (now the *Journal of Horticulture*), and elsewhere, and are fully deserving of attention; but for making the inside of the window available for raising seedlings, striking cuttings, and any simple work of the kind, a very few concise hints will be sufficient.

In the first place, if the pots are not new, let them be made very clean; before filling them with mould put crocks at the bottom to insure good drainage, and take care that the mould for filling them is not sour, clung, and poor, but rich, good, and of the quality best suited to the plant or seed to be grown. Take care to get first-rate seed, and to sow it thinly. It is a great mistake to sow seed too thickly, for if plants are ever fine after coming up thickly it is quite in spite of circumstances. Thinning out can never be done without almost as much injury and disturbance of the roots to those which are left, as to those which are removed, so that if the seed be so sown that the plants will come up an inch apart, and be left so until they grow large enough to require transplanting, much time will be saved. Plenty of air is indispensable, but the pots must not be allowed to stand in a draught. If a plant covered with buds be left between an open window and an open door the buds will fall: this shows how injurious draught is, but by all means give the plants abundance of air—the best and purest at command. With regard to watering and cleanliness, which appertain the one to the other, the water used should always be a few degrees warmer than the temperature in which the plants live; the rule for watering should be to water only when the plants want it, and then to water well, and, to cleanse the leaves, set the pots

out in gentle showers, from time to time, water with a fine rose, and syringe over the leaves sometimes.

Cuttings may often be struck in a less favourable place than is required for plants to grow ; many will do well if planted in a saucer of silver sand, and placed on the mantelpiece in a room with a fire in it, or in any other place where they can stand without interference, warm, but not exposed to the sun.

CHAPTER XVIII.

GARDEN DECORATIONS.

Rockwork is a very favourite decoration for gardens and pleasure grounds. Some people may call it a Cockney fancy to pretend to bring wild nature into trim gardens, by building up stones, and planting ferns, trees, sedums, and appropriate vegetation among them, but what matter if the owner like it, he may do what he likes with his own ; and it might be better for us if we would be contented to admire all that is good and admirable in our neighbour's garden, ay ! and in his character too, without ultra criticism. Let us admire our choice roses and all their gay companions in the border, and let the owner of rockwork hold to his stones, with their ferns, mosses, and other varied coverings, and each in each other's fancies may find many, although different, beauties.

A rock with flat unbroken surface has not a picturesque appearance ; rockwork should, therefore, be broken and uneven on the surface. A good mound of earth, rubbish, and brickbats is the best nucleus ; this will support the rockwork, and give support to the plants grown amongst it. Over this build up rough stones, pieces of rock, clinkers, and other substances, according to taste, with as varied a surface as possible. If the

rockwork be on a large scale deep chasms should be managed, for the reception of larger vegetation and small trees, and to give repose in masses of shadow. When the arrangement of the stones pleases, fill up between with rough mortar, except in the case of the interstices or pockets, which are wanted for planting, mix Roman cement to the consistence of thick paint, taking care to mix only a little at a time that it may not set more quickly than it can be used, and, by means of a large painter's brush, cover the surface of the rockwork with it. This will join all into one mass.

In planting the rockwork care must be taken to put in with each root the earth in which it is most likely to do well, and be liberal with moss on every bit of surface that can be covered with it, as it is valuable in retaining moisture. Plants especially adapted for rockwork may be bought in almost endless variety, and seed of many kinds can be had. The greater variety there can be in the plants, in the colours of the flowers and the character of the green the better, and there are many wild plants that tell well. Our English ferns in endless variation, and the hardy exotic ferns, form host enough, almost unaided, for a whole garden of rockwork. In dry summer weather ferns require frequent watering; and if the moss on the surface round the roots die, it may be covered with fresh without removing the old. When the fronds become dry do not remove them until the spring, when the young ones begin to shoot. The great variety which there is in the situations that different ferns occupy naturally, must be considered when they are planted. Some grow on high and exposed rocks, some in moist boggy ground, others in banks, under hedges, or in woods, while some thrive within the influence of the spray of a waterfall. Where trees and water are mingled with the rockwork, the habits of all kinds may be humoured by a little contrivance.

Nothing tends more to the varied beauty of a scene than water. To make the most of the limpid element in pond, rivulet, waterfall fountain, basin, and every other form in which it is pressed into the service of man

to beautify the pleasure ground, needs much aid from the hand of nature, for unless we have high ground and low ground, and command of water from the higher level, we cannot do much. In large towns the water companies do for us what nature, or expensive hydraulic apparatus, must do in remote country localities; but if there chance to be a force pump to the house, an upstairs cistern may be made to help the water service in the garden; and an intelligent working plumber can easily fix the necessary pipes. A basin or tank for water must be properly puddled or cemented by workmen who are thorough adepts at the kind of work, for employing any one who is not so will only lead to disappointment and endless delay. Fountains are turned on or off at pleasure, as few reservoirs are so abundantly supplied as to admit of their being left always playing. The pipes used must be strong and good, or they will not resist the pressure; they should be so fixed as to be safe from frost, and placed on a slope, to avoid accumulations of sediment. The water of the Emperor fountain at Chatsworth rises to a height of 267 feet. The fountain will not rise so high as the water in the reservoir by a great deal, on account of the resistance of the air at the place where it discharges, and of the friction of the pipe.

Where there is a natural sheet of water at command, its pretty effect may be increased by making the planting round it appropriate. Weeping Willows always look graceful and pretty, and of course do well on the verge of a pond or stream: they grow readily from cuttings of ripened shoots, planted in a moist soil in autumn. Napoleon's Willow, from the willow which grows on the grave of the ex-emperor is different from our common willow, and of slower growth. The flowering rush, *Butomus umbellatus*, is a handsome aquatic plant with fine heads of pink flowers; it should be planted or sown in the water. If the piece of water, or basin, be artificial, it is advisable, after it is made thoroughly watertight by puddling with clay, or by cement, to spread a layer of loam five inches thick over the bottom for the nourishment of the roots which are to grow in

it. Most plants which grow positively in the water are best to be planted in wicker baskets of earth; cover the surface of the earth with haybands twisted backwards and forwards, and round the plant, and lace it down securely with strong twine; this is to keep in the earth and the plant. With the aid of a plank laid across the water, lower the plant and its hamper into its place.

The *Calla Ethiopica*, that pretty large white flower which we used years back to call an Arum, is a hardy bulb, which will do well in the plain ground in the flower garden, if it be well protected from frost in winter. Both it and the marsh Calla, *Calla palustris*, are water plants, and will bear our winters with the roots under water. They thrive when planted in water, from their power of discharging superabundant moisture from the tips of the leaves. Plant the roots in wicker baskets, and sink them where the water is not more than three feet deep, as the plants will not flower until the leaves are above water, and they would grow weak if too tall.

The Calla is a handsome plant for pot culture, and produces its fine white flowers in spring. It is increased by offsets from the roots in August or September. Plant the offsets singly in little pots well drained, in sandy loam mixed with one-fourth leaf-mould, or well rotted manure. Water well while they are growing, and scantily after the leaves begin to wither, and afterwards give only enough to keep the plants alive. Leave the Calla plants in the light while the leaves die off, and then place them in some shed, in complete repose, for about a month. In October or November repot, and give plenty of water, especially if they stand in a sitting room with a fire. They may stand in saucers of water, but the saucers must be emptied every day.

The beautiful white Water Lily, *Nymphaea alba*, grows best in a muddy bottom, in deep water; its large milk white flowers are very fine.

The Water Violet floats, root and all. It only needs to be laid upon the water. The *Aponogeton distachyon*

is a pretty white-flowered floating aquatic, and although it comes from the Cape it is hardy.

The broad-leaved Cat's-tail, *Typha latifolia*, produces its large flowers abundantly in shallow water. The three-leaved Buckbean, *Menyanthes trifoliata*, has white flowers, and also does in shallow water. Other good water plants are *Nuphar lutea*, the yellow Water Lily, and *Nuphar advena*, from North America, with yellow and red flowers, *Hottonia palustris*, flesh-coloured flowers, and the *Alismas*. That flower of splendid blue, the Water Forget-me-not, *Myosotis palustris*, grows on the margin of the water; where it will grow it should never be left out, on account of its brilliant colour. The handsome *Spiraea*, of which there are several sorts of great beauty and various colours, does well in a moist situation near water.

Buildings of various kinds are used for garden decoration. Most apropos among them to the subject of the last few paragraphs is the bridge, which may look pretty and in character if it be useful, but in poor taste if it lead nowhere but where any one could go as well without its aid. A bridge seems out of place on any piece of water which one can easily walk round, but not so if it be to cross a rivulet. A mere footbridge of planks, with a hand-rail on one side, or on both, is the simplest bridge, and if a weeping willow, or other graceful growing trees be planted near, it makes a pretty feature in the landscape. The more simple such a bridge is left the better, for appearance it does not even need painting. If the character of the site be more artificial from high cultivation, a more set erection, either of wood, brick, or stone, may be more in character, and the approaches may be raised so as to lift the bridge higher above the water. If the immediate locality have a romantic character, make the bridge of unhewn slabs of stone or rock on strong supports; but everything in the shape of a bridge should not only be safe, but should look so in breadth, strength, and stability.

A grotto is appropriate near water, and if the situation be warm and sunny, it is useful as well as orna-

mental, for a cool retreat in hot weather. The ruder the rockwork for the grotto, and the larger in character, the better, and the outside should be so concealed as to give the idea of an excavation, not of an erection. The sides of grottos are generally made of rough stone or brick covered with spa, shells, madrepores, corals, &c., with a pebble pavement, in a pattern for the floor. Beyond everything the roof must be weather tight. Earth thrown on the top, if its weight can be borne, and planted with periwinkle, ivy, or low evergreens, rather hanging forward, looks well, or if the grotto be against higher ground the top can be turfed over, so as to give the appearance of a grass knoll from behind. For a grotto to be of any use it must be in so dry a situation as to be quite fit to sit in, and in that case the refreshing coolness of its shade is welcome in hot weather.

Moss-houses are simple wooden erections, the insides of which are covered with mosses and lichens so as to form variations and patterns of different colours. A framework for the house may be made with young pines or larches, the thinnings of plantations, and covered with laths nailed over pretty near together. Between these laths the mosses and lichens are thrust in firmly with a flat bit of wood, or with a turnscrew, the root end lowest. The moss should be so arranged as to form a varied pattern; and should quite hide the laths. The following kinds offer good variety of colour: for a glaucous green, *Dicranum glaucum*; yellowish green, *Bryum hornum*; a pink tinge, *Sphagnum acutifolium*; yellow white, *Sphagnum obtusifolium*. There are also the tree lichens and the reindeer moss.

Root-houses, made with pieces of roots of trees of fantastic shape, and wood houses, made of branches of trees with the bark on, and often ornamented with pines of different sizes, are pretty and appropriate. For all of these roofs of thatch harmonize well with the style of the buildings, and they may be made simply arbour shape, or more elaborately finished up with doors and windows.

Similar in character may be made baskets on lawns,

either to enclose beds of gay flowers, or to be filled with plants in pots. This looks very pretty, if the pots are sunk in wet moss, and covered over the tops with the same. A canary creeper, or some such pretty delicate foliated climbing plant, should be led over the handle.

Summerhouses, of all shapes and sizes, arches, arcades, covered ways, garden seats, pretty bits of fence, and vases for holding plants in pots, may all be made of rough bits of wood or root, and come in useful in various positions, especially to avoid monotony in a large garden.

If a garden be large it should have plenty of seats, and they should be of such a kind as to be convenient, and to avoid being at any rate an eyesore. For the convenience part of the question they should be on a dry spot, sheltered from sun at the time of day when shelter is most needed, and they should have a board for the feet, or an appropriate footrest of some kind. In our climate there are not many days when delicate persons can with impunity sit with the feet on the bare ground. For this reason, too, seats and footrests should not be of stone. Turf seats in sunny spots are good for some seasons, and very pretty. Seats of tasteful form are made of cast, wrought, and corrugated iron, wood sprinkled with silver sand while the paint is wet, to imitate stone, wooden and iron seats with the backs to fold down upon the seats to keep them clean and dry when not in use, seats of wood and iron moving easily on wheels, and in fact seats of every shape, make, and material, that fancy can invent, and money purchase. When seats are placed along a path a gravelled recess should be made to receive them, that they may not stand in the way of persons walking in the garden. Wooden folding chairs are light and convenient, as are also those made of straw, like beehives, and those of cane—all these must of course not be exposed to wet.

Stumps of old trees, partially covered with ivy, and with flats and interstices for flowering plants in pots, and sprays of creeping plants hanging about them, form picturesque ornaments in suitable places.

Aviaries, too, where they are good in form, and not too prominent, may furnish great amusement, but live stock of any kind must be well kept, and thoroughly tended, to be satisfactory. The same may be said of water fowl and of gold or other fish.

Labyrinths or mazes appertain to bygone times, and few gardens are of such ample dimensions that space for them could be spared. The pleasure they afford, too, is of a somewhat romping nature to suit modern taste. If a labyrinth be already made, and have to be kept in order, constant care, cutting, and trimming must effect that object.

A fernery under a roof of glass, provided always its situation be appropriate, furnishes garden amusement under shelter, always valuable in our English climate. If its position be warm and sheltered stands of ornamental foliage plants may enhance its beauty and give variety. An entry like this to some portion of a house, with a handsome mosaic pavement, may be in good taste.

Now that my list of decorations for the garden is surely long enough, I can only conclude with the advice that they shall not be introduced too freely. The noble bearing of trees, the softening repose of evergreens, the gay luxuriance of flowers, these are the best ornaments of the flower garden, and temples, pagodas, bridges, towering rocks, low piles of stones, grottos and summer houses of elaborate construction, should be used sparingly, and in the good taste of reservation, or they will only make a stiff display of building material, more costly than pleasing, and give to a gentleman's garden too much the character of a public tea garden. The decorations, of whatever kind they may be, to look well, should be in character with the house and ground; and above all, to be pleasing, they should not only look useful, but *be* useful, for if a path leading nowhere, a bridge to be crossed when we could rather more conveniently walk on the plain ground, and similar introductions, bring the laugh of our friends against us, we have no business to complain.

CHAPTER XIX.

GARDEN OPERATIONS IN JANUARY.

WHEN we think of January and the garden together we are apt to fly to the conclusion that very little can be done then; but when we come to consider all that may be done, in connection with all that wants doing, to prepare for the superabundance of spring work, which will become urgent with the first break in the weather, we remember that the first month in the year will not be a bit too long to prepare for the eleven which are to follow it.

One job which may most usefully occupy the leisure of winter is to set the tool-house in order, putting up new shelves, hooks, and nails wherever they are wanted, and finding a good and appropriate place for every tool and garden appliance. It is a good time too for getting all the tools set in order, while those which want mending can best be spared. Stores of stakes, shreds, sticks, and all appliances of that kind can be cut, and put aside for future use.

Dahlia roots and all roots of the kind which are put by, should be occasionally looked over, to see that they are safe from damp, mice, and other enemies. If the weather be at all mild for the season snails and slugs may be hunted for and destroyed. A few of these destroyers killed early will save much killing later, and killing is not pleasant work.

Preparing composts, and setting them ready for future use, is one good employment for January leisure. It is well at this early season to settle in our own minds the flowers which we wish to make our specialities in the coming year, and to prepare for them by considering the composts which they will require, and laying them up ready. It is the more advisable to attend to this thus early because cartage now, whenever there is not frost enough

to make it difficult, will come cheaper, and be more easily attainable than it will be when spring shall set every cart at work.

Manure too, for laying up to mellow for future use, can often be bought in January cheaper than a month later, when almost every owner of a garden gets anxious to make a hot-bed. Some of the most valuable composts are two years in mellowing or more, and no time should be lost in setting them to work. A little of the winter leisure may be very valuably occupied in turning over, and thoroughly mixing the different composts, not forgetting in doing so to pick out wireworms, and all mischievous grubs most carefully.

Gravel walks should be rolled, after slight rains and after gentle thaws, but in a quick thaw using them should be altogether as much avoided as possible, and (a word to the wise) before thaw comes completely on all drains should be cleared of dead leaves, and placed in good working order. Snow should be swept from the paths pretty constantly, to prevent its softening them completely when thaw comes; but it may be laid up in masses on any spare bit where it can do no harm, as it is a valuable fertilizer. To some plants a covering of snow is as good a protection as any.

When thaw after frost makes the earth moderately soft, not sappy, it is a good time for levelling inequalities on lawns, which should always be cleared away if possible, because they are not only detrimental to its general appearance, but they are also terribly in the way in mowing, whether with a machine or with the scythe. The grass may be swept and rolled from time to time.

All the seeds may be looked over, arranging, packing up, and writing on those that are good, and throwing away those which have been proved to be bad, or which are too old. N.B.—Use mouse-traps whenever they are wanted: the killing trap, a row of four to be bought for sixpence, I have always found the best.

As long as winter's utmost rigour kindly holds aloof lose no time in planting any trees, shrubs, or plants that

are needed, and in finishing all the transplanting, choosing for the purpose nice mild days.

If the tree to be planted is from a distance do not unpack it, and if it is at hand do not dig it up until the hole is ready to receive it, and it will be a good thing if the ground be sufficiently moist not to require much watering. The best plan is to move trees with great balls of earth round the roots, by which means they are little disturbed. Another is to trace the roots, and spread them out well in the new soil, press them in well, and cover carefully. If the tree look badly afterwards, water it over the head, weather permitting, but avoid much water to the root as too chilling. A little mulching may do good in the night in cold weather, throwing the manure aside in sunny days, that the earth may get warm. When planting out from pots, shake the earth a little from the roots, spread them, and give a little water, but put dry earth on the surface of the ground. If stakes are wanted, put them far enough off not to touch the roots, and the protection of branches of evergreens set round may be of service. If some shrub of a choice kind appear to do but badly, search carefully with a fork for the extremities of the roots, and dig outside of them a trench one foot and a half wide, and fill it up with fresh, rich soil, for the roots to spread into when growth recommences.

All bulbs which are showing above ground must be protected, according to their kind, as mentioned in their respective chapters. Half-hardy trees or shrubs may generally be protected by having some light covering thrown over the tops, as frost falls from above. This, with a little mulching of dead leaves at the roots, and a hayband twisted round the trunk, will generally be enough. Sawdust, leaf-mould, or old tan, makes a good protection for anemones, tulips, hyacinths, and scillas. Wherever the beds require a dressing of fresh soil they should have it, and this is often more beneficial than manure, which, if too abundant, is apt to produce leaves rather than flowers. On poor soils, however, give manure, but let it be well incorporated with the earth, deep

down. Pinks, pansies, polyanthuses, and all plants of a like nature, should be looked over, and the loosened roots well set in the earth. Before severe frost takes us by surprise it will be well to be prepared with good simple protection for everything which is likely to be killed or injured by it, and we must be especially on our guard against sharp frost, which comes unprepared for by the protective mantling of snow.

Plants in pots, put by in windows, unused rooms, frames, pits, or any indoor corners, must have all the air and light possible: as long as the weather holds off from becoming very severe do not stint giving air in abundance, but water with caution.

Use the mild time industriously in deeply working the flower beds wherever there is space enough at liberty to do so with safety to the plants, &c., which are growing in or near them, for depth of soil is most valuable, and many flowers will overcome the difficulties of bad seasons if they can have the power of choice in pushing their roots deep in dry weather.

To commence preparations for potting, which at most times gives plenty of work, get all the pots thoroughly well washed, and ranged in sizes, indoors. Pots should never be used dirty, but should be clean and smooth inside, that the future necessary shifting of the plants may be easy. They should be kept dry too, as from their porous nature they absorb wet, which freezing, will crack them during the first intense frost, and they should be used dry, that the earth may not adhere to them too much. Get the earth for potting moderately dry. In re-potting it is a good plan to warm the potting earth by a stove or a kitchen fire, that it may be a few degrees warmer than the ball of earth to the re-potted plant. This will encourage the points of the rootlets to spread into the added new soil. Avoid doing the re-potting in a cold place, for plants should have no check at this season. When ladies pot their plants they require a potting stick to press in the new earth which is given outside the old ball. It is a flat stick, smoothed and shaped like a stout-made paper-knife. When potting

or shifting is required in winter, avoid giving more water than is necessary, as doing so would cause a chilling evaporation which would be injurious to the plant, and water as much as needed before shifting, not after.

To ascertain if the mould is of the right degree of moisture for potting, squeeze up a ball of it in the hand, and if it just holds together slightly it will do; if it forms a lump which can be laid down without its falling to pieces it is too wet.

In potting always place crocks at the bottom of the pot one inch deep or more, and generally a little fibry loam, moss, or rooty peat over them, then a little earth and the plant, and afterwards fill up. Be careful to use for each plant the kind of earth best suited to it.

The foliage of plants in the house should be kept clean, as well as the outsides of the pots and the saucers. The best way to clean the leaves is to wash them very gently and carefully with a soft sponge, and water of a temperature of 65° or 70° . With small plants, which have small foliage, put a paper tight down over the mould, hold it firm with the hand, turn the pot upside down, and give the plant a gentle washing in a pan of tepid water. Large plants, with minute foliage, must be syringed.

Study the requirements of the flowers which are to be specialities, and make the hot-beds which will be wanted. Above all things avoid coddling favourite plants, until really severe weather renders it necessary to shut out frost and give protection.

These hints, given for January, will many of them come into play during all the spring months, especially those relating to doing indoor work in bad weather, and earth stirring and other outdoor work whenever there is neither frost nor wet. Planting, transplanting, potting, and re-potting too, must be done whenever the weather and other circumstances render it most advisable all through the spring.

SUMMARY.—Set tool-house, tools, and all other garden appliances thoroughly to rights. Look over bulbs, &c.

Prepare and lay up composts. Attend to gravel walks and lawns. Look over and arrange the seeds. Plant and transplant. Protect when necessary. Clean garden-pots, set them in order, and carefully perform the potting required. Keep plants in pots clean in the foliage. Make hot-beds in good time. Avoid unnecessary coddling.

CHAPTER XX.

GARDEN OPERATIONS IN FEBRUARY.

As this month and the following should see the conclusion of necessary spring attention to the grass of the lawns, that subject had better be considered now. Some persons like the soft elasticity of a moss-grown lawn, and this vegetation has the advantage of growing under trees, where grass will not. Some persons, on the contrary, think it quite out of place there, and now is the time to eradicate it. Draw up the moss with a rake, and clear it away: about two rakings will probably be necessary. At the time of doing this, all bare places on the lawns, under trees, and in shaded corners, should have the surface scratched, and a little good manure spread, or manure water given, according to circumstances. In March, the places where the moss and the bare spots have been, may be sown with grass seed, and have a top dressing of fresh soil, mixed with lime or bone dust, and some well rotted manure. Pretty frequent rolling throughout the year, cutting out daisies, and dandelion and other weeds as they make their appearance, frequent mowing after the grass takes to growing, and clipping the edges from time to time, will complete this branch of garden work for the year.

There are a few more jobs to occupy days when no out-of-door work can be done throughout the spring

months. Set in order the garden account book, arrange all the lists of roses and other choice flowers and plants, settle what must be sought for and bought to complete the stocks of particular kinds of plants, and make out lists of seeds to be purchased, or otherwise obtained. Make plans of the beds of the flower garden, and settle how they are to be filled, preparatory to arranging the stock of cuttings, bedding plants, and annuals: head work now will save lots of hard work hereafter, and work for the pocket also. Cut, shape, and smooth plenty of tallies, and put them by in a safe and usual place, for little will be gained if they are either put away where they cannot afterwards be found, or left about to get lost. Let some be of a sort to set in the ground, and others furnished with a hole and twine or wire, for fastening them to trees and plants. It is a good plan for security against loss of names to have numbers cut in the tallies, and to keep the lists of plants agreeing thereto in a book. Any covers for protection (*see* p. 18) that can be made on wet days, are pretty sure to come into use very soon. Rustic stands, seats and baskets, can be repaired, and any carpentry job wanted, attended to. Prepare a lot of crocks for potting.

Carry on potting to the full extent of the space at command for keeping the plants where they will be safe from frost, and not too much crowded to do well. Any plants from which early cuttings will be wanted should be forwarded now as much as opportunity and their healthy development admit, remembering not to force too much, as run shoots for cuttings will not make strong plants.

If many annuals are wanted, the hot-bed or hot-beds made last month will now be found useful in rearing hardy and half-hardy varieties. For hardy annuals, plain loam will produce sturdier and better blooming plants than a more manured soil; and if they are raised on bottom heat, they should be removed from it as soon as they are above an inch high. Hardy annuals may be sown in the open borders towards the end of the month, if the weather be free from intense

frost, and, even if it continue a little sharp, seed may be sown on a warm sheltered border, and protected, giving air whenever it is feasible. The object to be kept in view is, to get a very sufficient supply of strong plants to put out a little later in the year, and to flower early. Autumn sown annuals, which have stood the winter so far, may have a dressing of soot and ashes for the *good of the slugs*, and protection, if necessary.

A small frame, with sashes, merely placed on a raised bed, not on a hot-bed, and half-filled with cinder ash, will be found most useful in giving just enough protection to plants which are coming forward for turning out. Before placing the pots in it water the cinder ashes well with thoroughly boiling water, to destroy the insects.

Cuttings for bedding plants may be put in whenever they can be got, and safe room can be spared for them, for if a set flower garden is contemplated, a great many will be wanted. Cuttings which are growing well may, perhaps, be removed from the place where they have grown to a cooler, to make room for fresh set cuttings. Give choice Dahlias heat, to start the shoots for making cuttings.

Prepare for slugs and snails with a top dressing of soot and ashes wherever plants grow which are their especial favourites, and try to catch the mice in traps before the crocus roots and other bulbs fall a sacrifice.

Look well through your lists of plants to see what seeds should be sown, indoors or out, this month, especially remembering Stocks, Larkspurs, and all usefully showy plants.

Consider the requirements of Hyacinths, Tulips, Carnations, Roses, Auriculas, and all choice flowers, and give them the protection, dressing, fumigation, pruning, and other treatment they stand in need of. The exact time for all this depends so much on the weather, that the work of two seasons, the same month, can scarcely ever be alike; so the best plan, with regard to favourite flowers, is not to depend on the month's instructions as to their treatment, but to look

back to their chapter. This has especial reference to florists' flowers.

SUMMARY. — Clean lawns, and get them into perfect order. Find indoor jobs for bad weather. Continue the potting. Prepare for early cuttings. Raise annuals. Provide a cool frame for them. Make cuttings. Catch vermin. See after choice flowers, and give requisite care.

CHAPTER XXI.

GARDEN OPERATIONS IN MARCH.

Now, in the garden, the "mirth and fun grow fast and furious." Not an hour of fine weather and daylight must be lost. The borders under screens and shrubberies must be thoroughly set to rights, forking the ground and putting in manure about all trees and shrubs that love rich earth, as deep as it can be put with certainty of not interfering with any roots. Trees and shrubs should be thinned out, so as to leave room for a free handsome growth for all which remain, taking, of course, the poorest in kind and handsome growth, and leaving the best. Any which seem dead must on no account be interfered with thus early. There must be no delay now in completing all the planting and transplanting which has accidentally or carelessly been left thus late. The sooner in the month the shrubberies can be set thoroughly in order the better.

I intended to have done with the lawns last month, but I must return to them to give a short extract from that useful periodical the *Journal of Horticulture*, on the kind and weight of grass seed for sowing lawns. The quantity named is for an acre, but any one remembering that one acre contains 4,840 square yards can divide the quantity to suit his own lawn. "For light soil the mix-

ture should be *Festuca tenuifolia*, two pecks; *Poa pratensis*, two pecks; *Anthoxanthum odoratum*, three pecks; *Lolium perenne tenue*, two pecks; *Agrostis stolonifera*, two pecks; white Dutch clover, one peck. For strong heavy soils the mixture should be, *Poa trivialis*, two pecks; *Festuca duriuscula*, two pecks; *Fescula ovina*, two pecks; *Anthoxanthum odoratum*, two pecks; *Cynosurus cristatus*, two pecks; *Alopecurus pratensis*, two pecks; white Dutch clover, one peck. Roll the lawn regularly; sometimes with a very heavy roller."

All the flower beds and borders should be forked and regularly set in order. Wherever there is space for it to be done without mischief to growing plants, shrubs, or trees, let it be deeply worked, putting in leaf-mould deep down, for a deep soil in a garden is always good. Where beds stocked with perennials and roots of all kinds render deep working dangerous, fork the surface, finely pulverizing the mould, and taking care not to destroy. Gardeners' careless forking and digging often destroy plants which less careless owners find it very difficult to replace; and when a valued plant, or group of bulbs, has disappeared, the only explanation to be got, "I dug over the place, and I am sure I never saw it," gives very poor satisfaction. As the flower beds are forked over, have a mental eye to their future planting, and a bodily one to their present requirements, and as you progress put in the compost and the manure most likely to produce a good result for the coming floral season.

March winds are strong; none will deny that. After gusty days and nights it will be advisable to look over trained climbers and beds of choice flowers, and put in order whatever has been disarranged, especially taking care to fix and steady half-uprooted plants. Where winter wet has rotted stakes and ties they should be renewed.

Box and other edgings should be replanted and set in order, all the garden reduced to perfect neatness, and if any alterations in the planting be desired let it be done at once, for we may now expect the growing season to come upon us without loss of time, and when growth

commences removals will be much less advantageous. This has reference to many miles round London, and similar localities. In Dorsetshire, beautiful Devonshire, west of that, and in the mild Channel Islands, work in the gardens will be more forward.

Continue to make cuttings, and to pot off growing cuttings, removing the well-established plants to cooler places, to make room for the new ones. Geraniums, Calceolarias, and Verbenas will strike readily now on a nicely made hot-bed. Those who wish to use many bedding plants in their garden ought at this time to have a large supply on hand, from fine cuttings made in the autumn, to be continually reinforced, this month, by fresh-made cuttings.

Hardy annuals, which were sown in February, should be hardened off for planting out. Some Sweet Peas may be sown very thinly in pots, and raised in a gentle hot-bed. Some may also be sown in the open borders, and if, when those which are a little forced come forward, one pot of the forced peas is planted close against a clump of those grown in the natural ground, the two will make a fine clump which will come forward early, and last in flower a long time. Prick out the plants of ten week Stocks, and any similar seedlings in hand, and sow more seed for a succession.

This month there may be a general sowing of hardy annuals in the borders, and also seeds of good perennials and biennials without stint. In fact, abundant provision of plants of all kinds must be made, and all our lists looked over and books consulted, to see that we forget nothing which we shall have reason to wish for when we come to plant out finally, for every fine week lost now will be doubly missed later in the year.

Half-hardy annuals may be sown in a hot-bed, and when the seedlings are an inch or two tall they may be transplanted into another hot bed, or planted out in pots to remain until May, when they may be planted out in the borders. Tender or greenhouse annuals may also be sown in a hot-bed, pricked out into another, and

afterwards placed in a greenhouse. There are, however, many which, if planted out in warm borders in June, will flower freely, and even ripen seed.

Make another hot-bed, early in March, to be ready for next month.

SUMMARY. — Set the shrubberies fully in order. Sow grass seed. Set all the flower beds in order. Make climbers and flower roots firm after rough weather. Attend to box and other edgings. Continue to make cuttings. Prick out annuals and sow more. Sow seed of perennials and biennials. Sow also half-hardy and hardy annuals. Make another hot-bed.

CHAPTER XXII.

GARDEN OPERATIONS IN APRIL

THE important work of making cuttings requires a few more detailed remarks, which will apply more or less to all the period during which they are made. Cuttings have the advantage of perpetuating the old plant, whereas seedlings may vary from it in appearance or character.

In quick-growing soft-wooded plants, take as cuttings young shoots or tops of the plants. Such are *Anagallis*, *Antirrhinums*, *Calceolarias*, *Carnations*, *Chrysanthemums*, *Dahlias*, *Pinks*, *Wallflowers* (only the double ones are worth growing from cuttings), *Gorterias*, *Gaillardias*, the low-growing *Lobelias*, *Fuchsias*, *Geraniums*, *Petunias*, *Pentstemons*, *Salvias* and *Verbenas*. Pots of all these will do in a frame, on a very gentle hot-bed, made of dead leaves, manure, or tan, or in a more artistically heated house: *Geraniums* and *Fuchsias* almost anywhere.

The cuttings of some plants should be the partially ripened wood. Such are *Camelias*, *Cape Pelargoniums*, *Coniferæ*, *Erythrina*, *Echites*, *Gardenias*, *Gordonias* (something like *Camelias*), *Magnolias*, *Oleanders*, and many others.

Many plants may be propagated by cuttings of leaves with a bud at the base. Cinerarias, the tall Lobelias, Statice, and most herbaceous plants, are increased by offshoots from the base of the parent plants. Some plants do best from cuttings of the roots, and the Rockets, Lychnis, and such like, by cuttings of the flower stems. Cuttings of hollow-stemmed plants should be cut at a joint.

The leaves should be removed from the part of the cutting which is to go in the earth, and generally some at the top removed and cut, to reduce evaporation. For the same reason, to reduce evaporation, they are covered with a bell glass, and shaded. Shade is, however, a necessary evil, tending to weaken and enervate, and to make them shoot upwards instead of root downwards. Give as little shade as possible.

If pots and pans are at all scarce, as they are in most establishments at this season, cuttings will do in just anything that will hold earth. The children picked up on the sands one day a worn-out tin baking dish, with holes in it, and begged that it might not be thrown away as they were "sure it would come in handy." Now it, and other things about as incongruous, *are full*. For striking the cuttings use light sandy soil, with good drainage. A little heath-soil or leaf-mould may be added, great care being taken that the last is thorough *mould*; for if any rotten leaves remain in it they will cause damp and mouldiness. Do not take cuttings until the parent plants have begun to make their spring growth, and then try to make the cuttings continue that growth without interruption. To effect this do not wet the cuttings, nor let them flag. As soon as they are planted take them at once to the place prepared for them, where they may have a little more heat than they had before they were cut, moist atmosphere, a little air at night (weather permitting), and as much light as they will bear without flagging. If they flag at all they must have shade, or a taste from the syringe.

Recently planted or transplanted trees should have their welfare cared for. If the weather turn warm and

dry, a little sprinkling over head with the water engine will do good, with less danger of giving a chill than watering the roots. A hayband wound round the stems, and a little hay scattered about the roots will prevent injuriously chilling evaporation. Wherever the roots seem shaken by the wind make the earth firm round them, and look to the stakes.

Continue to sow plenty of hardy annuals if the requirements of the garden will need them, and if the weather should become mild a good many may now be sown out of doors. If the season be late look over the chapters on past months, and finish up work which may have been rendered impracticable then by severe frost or other hindrances. In forking over the flower beds and borders take especial care not to destroy any fine little self-sown plants; for nature, which has led them on so far, will often produce in them finer plants and better bloom than we can get in those which we rear with greater pains.

The hot-bed made last month may, when ready, be brought into use, by being filled with tender annuals, such as French and African Marigolds, Asters, Zinnias, Nolas, Canary Creepers, Morandias, Lophospermums, &c.

Much planting out, and pricking out into the open borders can scarcely be depended on in our climate with safety yet, so if the indoor accommodation get over crowded, and turning out become necessary, protection must be provided. We need scarcely fear worse weather in April than a simple pit or frame will provide for, if it have a cover of calico, stretched on a wooden frame, to put on at night. *Frigi domo* has been much used and recommended, but white calico has the advantage of letting through more light.

The early flowering bulbs will now be getting into full beauty, and the garden will be gay with all the early flowers, which in planting should never be left out, for when do we feel so greedy after flowers as we do when we have lost sight of them for months?

As the weather gets mild take care that indoor plants do not get too much warmth, watch for green flies

and other insects, and destroy as they appear with fumigation, washing, and hand picking. Too much warmth and plenty of insects go hand in hand. Watch for aphides on indoor roses.

SUMMARY.—Continue to make cuttings. See to the roots of planted and transplanted trees, and water if necessary. Sow plenty of hardy annuals, and the more tender sorts in a hot-bed. Plant out and prick out, where protection can be given. As the weather gets mild keep too much warmth from plants indoors, and look after insects.

CHAPTER XXIII

GARDEN OPERATIONS IN MAY.

IN May planting out may go on with spirit, for even in our late springs, frost scarcely ventures into the “flowery month.” Mignonette should be sown in full tufts, which will come in nicely, as those raised indoors and planted out, and the self-sown plants, sure to come fine and early, get a little *passé*.

All the showery or damp weather must be made the most of for planting out the hardier kinds of choice bedding plants, such as Calceolarias, Verbenas, Scarlet Geraniums and such like, leaving Heliotropes, Petunias, Anagallis, Nierembergia, and all that may be hurt by very slight night frosts, until the end of the month. It is better to be rather late in planting out, than to run risk from late frosts, provided the plants, when they are put out, are moved with care to take a large undisturbed ball of earth with each root.

It is very well worth while to make and have ready in May a slight hot-bed for the cuttings to have all to themselves, and it can be done with very little trouble. Place a foot and a half thickness of stable litter, lay on nine inches of decaying leaves, and tread them down well; then add two inches thickness of well decayed leaves, and after that two or three inches of sandy loam and leaf-mould mixed. Beat the surface smooth, water it with warm water, and finish it with a layer of silver

sand. Cuttings will strike quickly in this, and it will be found very useful.

Dahlias and many other tender roots and plants may be turned out this month, when once there is safety from more frost. Look through the chapters about favourite florists' flowers, as they will want plenty of work bestowed upon them throughout the spring months. Shrubbery walks, and the beds under the shrubs may be finished off with final neat arrangement and planting, and sowing seed of hardy, quick growing annuals, wherever gay patches of bright colour are wanted.

As groups of annuals grow, care must be taken that they are not so thick as to crowd each other or they will never be fine, either in the plants or in the flower. Plants which are growing tall enough to need it, should have good stakes.

All the litter that has been used about the garden for giving early protection will scarcely be wanted longer, and it may as well be turned to account for helping to make yet one more gentle hot-bed, which will be sure to come in handy for some purpose or other.

Plants which are in luxuriant growth, and are blooming very abundantly, may have a little manure water if they are of kinds which require rich nourishment.

SUMMARY.—Follow up planting out throughout the month. Plant cuttings in a gentle hot-bed made on purpose. Plant Dahlias, sow annuals, finish up all arrangements in the shrubbery, &c., and look after the requirements of the florists' flowers. Thin groups of annuals. Use spare litter. Give a little liquid manure to plants in very full growth.

CHAPTER XXIV.

GARDEN OPERATIONS IN JUNE.

As early this month as possible all the planting out should be completed, and all the planted out will for

some little time after require constant watching and careful attention. Of course some failures will occur, even under the most favourable circumstances. It is well, therefore, to make provision by having a few plants in reserve in the nursery. A garden of even very moderate size should have a small piece set aside as a nursery, to be kept stocked with a few fine plants, to be always ready to fill up vacancies, wherever they may occur. Trained plants, on walls and trellises, should be gone over carefully, training and tying whenever necessary.

The early flowering bulbs will be very much in the way, as we want to arrange and plant the garden finally for the year, but we must on no account sacrifice the roots by cutting off the leaves too soon of those which would be injured by such precipitance. Many may, however, be taken up carefully with large unbroken masses of earth, and planted in any out-of-the-way corner to die off at their leisure. Other roots which have lost their beauty for the season, may many of them be transplanted, with great care, in damp weather.

In clearing off stocks of cuttings, seedlings, and young plants of all kinds by planting out, it is a good way to pot a few fine ones of each kind, and to range them on beds of ashes (to keep off insects) in the nursery, or any place where they will be ornamental rather than the contrary. They will require little attention beyond watering in dry weather, and they are pretty sure to come in handy at a future time. If they should happen not to be wanted for filling up vacancies in the garden, the greenhouse, in boxes or vases, or anywhere else where deaths or failures may make vacancies, how very few people there are in flower-loving England to whom a pretty flower in a pot is not an acceptable present; and how many persons there are owning small gardens to whom a nice plant is at any time most welcome!

Where the present gaiety of the garden will admit of losing some flowers, a great many plants may be encouraged to grow very fine by nipping off the flower

buds. Some groups may be induced to remain longer in bloom, by serving some of the plants only in this way.

Unless we get very nice showery weather all the time the planting out is going forward, watering is a laborious item of the garden work, for until the young plants take to the ground they would die without this necessary evil. The water should be taken from an open tank, where from exposure to the air it will not be below its temperature. For delicate plants in chilly weather it should be a few degrees above it. The collars of plants should not be wetted, but the water so bestowed as to be taken up by the extremities of the roots; a little sprinkling overhead with a fine rose refreshes them. When liquid manure is given take care that it is not too strong, and give it to no plants but such as are in active growth. When they are in full vigour of growth, and in danger of exhausting themselves with abundant flowering, the manure water may be given, good and without stint. Put it in at a little distance from the roots, so that the rootlets may take it up. Hydrangeas, Balsams, Cockscombs, Chrysanthemums, and such like plants of a vigorous growth will benefit by manure water. Do not give it to Heaths and similar hair-rooted plants. Never humour plants with constantly repeated drops of water: if they get into the habit of wanting constant watering they will never do without it. On the contrary, do not water unless it is necessary, and then give a good soaking twice a-week, and do not forget the advantage of mulching the roots. As soon as plants approach the season of rest, which varies in different kinds, of course the watering must be reduced—almost discontinued—as many times already stated.

Mulching, it may not be superfluous to state, is laying straw, litter, or manure round the stem of a plant or tree, and over its roots. In winter it is valuable as a protection to Magnolias, Camelias, and all tender trees and plants, and in summer it may be used sometimes to prevent deaths from excessive drought, by keeping in the moisture. It also gives nourishment to the roots

below by gradual percolation. When it is no longer needed on the surface of the ground it is generally forked in as manure. Being rather untidy in appearance it is not much used in the flower garden, although its benefit is often great.

Let any digging that yet remains be done on warm, sunny days, as turning in the hot surface does the earth great good: this is the opinion of a first-rate judge in horticulture.

Cinerarias which have bloomed in pots may be placed out on a north border, worked and raked fine and smooth, and the self-sown seed will produce fine young plants. Some seed of fine kinds may be sown in pans, to produce plants to bloom early. Some plants may be planted out on a north border, and if a few of them are cut down and well watered they will throw up suckers, which can afterwards be separated from them. In these chapters on the work of each month I have tried to avoid repeating the instructions already given in treating of the choicer flowers in former chapters—to those chapters I must, therefore, refer the reader for much monthly work to be done among them as regards their treatment and propagation.

Young Conifers planted out on lawns should be watered most abundantly, to encourage them to make their growth.

Gross shoots on choice free-growing roses may be pinched off at about the third eye, to stop their keeping all the growth to themselves to the detriment of the general growth of the plant.

An excellent writer in the *Journal of Horticulture* recommends the following treatment of leafy plants when first planted out, and I have no doubt of its goodness. On the first day he waters *just enough to moisten the roots* twice during the day, and syringes over the whole plants, scattering the drops like dew, or like a very gentle misty shower. The second day he syringes three or four times, if the sun is bright; he prevents evaporation *from the leaves* by giving moisture *on them* to evaporate, and by the third day they hold up

their heads and want little more. This answers, too, on large beds, as a few strokes of an engine scatter water enough far and near, and the moisture which falls on the ground rises again in refreshing mist.

As the flowers planted out begin to grow freely, if you wish to cover a surface attend regularly to pegging down, while the young shoots are yet pliant and tender. But in the old English flower garden, where flowers of all colours and all heights cover the beds and borders in gay variety, the kind of garden in which I most delight, so fit for the culture of stable, good perennials, choice roses, fine shrubs and trees, and all the *lasting* things that make our garden like our older and most valued friends, always the same in solid goodness though varying in surface from year to year, pegging down also comes most convenient in giving us good masses of one colour or one flower wherever we most want it.

As the rampant growth of summer begins, keeping order among flowers and weeds will want constant watchfulness and give pretty constant work. Box-edgings should be clipped in showery weather.

All the tender annuals may be planted out this month. and plenty of Cupheas and other plants which will come out nice and showy in the autumn.

SUMMARY.—Finish the planting out, making up a reserve for filling up the place of any that may fail. Where practicable, remove bulbs, &c, to make more room. In clearing off stocks of plants, reserve some in pots. in case of needing them. Where convenient, nip off flower buds to make plants grow large. Study the best way of giving water and manure water. Mulching. Dig and stir the earth in warm weather. Attend to Cineraries, and all other choice flowers. Water young Conifers abundantly. Attend to Rose trees. Syringe leafy plants when they are planted out. Peg down, and attend to neatness in growth and weed constantly. Plant out tender annuals and plenty of plants to be showy in autumn.

CHAPTER XXV.

GARDEN OPERATIONS IN JULY.

GARDEN work is a rotation which scarcely ceases the year round. As we begin to reckon that getting through all the planting out, and full arrangement of the beds and borders will give a little leisure, the growing season brings on weeds apace, and rampant growth in vegetation makes constant watchfulness, pegging, training, clipping, staking and tying necessary. Insects, too, increase apace as soon as the restraining hand of winter is removed, and all these things give work in abundance, and will do until frost shall again put vegetation, and its devourers, in the dormant stage.

Flowers in vases, and such like decorations, should have the earth stirred, manured on the surface, and covered with moss, to prevent evaporation, and the necessity for constant watering; vacancies in them, and spare corners may yet be filled up to make the general effect good, and pretty trailing plants should be led over the edges, to do away with the stiff look which stucco so often wears. Good foliage, and plenty of flowers, are both necessary to keep up their good looks throughout the summer.

Trees cut to fantastic shapes should be cut this month. The fittest for the purpose are, yews, cypresses, bays, *arbor vitæ*s, box trees, and Portugal laurels. They must be clipped in again from time to time. Industriously remove suckers from roses, and clear off all the wild shoots from the stems of standards. Many florists' flowers will require especial attention in culture and propagation.

Roses are now showing pretty plainly whether they have the soil they like. No watering will keep those on light and poorish earth in fine order, whereas a little sand and plenty of manure will, to a great extent, overcome the difficulties on stronger land.

If the beds are likely to suffer from drought, the surface may with advantage be mulched with a mixture

of leaf-mould, and the manure of an old mushroom bed passed through a coarse riddle. A sprinkling of soot and lime will trouble injurious insects. Moss and cocoa-nut fibre also make good materials for mulching. The especial benefit of this mulching the surface of the borders is, that it tends to produce roots near the surface, and bloom, whereas manure deeper down makes the plants run to luxuriant foliage at the expense of flower. Cocoa-nut fibre and moss both make a nice looking surface.

Liquid manure may be given to free-growing Roses, to bedding plants, and other flowers, on the beds in which it is advisable to promote freer growth. Where mildew shows itself water the spot where it appears, and sprinkle sulphur over it.

Cuttings of herbaceous plants may be struck under a glass on a north border. Choose the small shoots which are without bloom.

As the season gets on, general tidying in the garden gives plenty of work, and all the climbing trees must have regular attention in necessary pruning and training, keeping under the too rampant growth of the most luxuriant among them. The garden should be gone over regularly at least once a week, to place stakes and sticks wherever they are needed, prune back rampant growth wherever it appears, cut off dead flowers and withered sprays, stir the earth and keep it light and neat, and weed incessantly everywhere. The weeds on the paths alone want constant attention, especially after every little spell of wet weather. Weeds on the lawn, too, require constant cutting up, with care not to make, in doing it, unsightly bare places in the grass. The flower beds, too, the shrubberies, and all parts of the garden, require regular careful hand-weeding, or chopping over with the hoe, according to how they are planted. Pay especial attention to any weeds which seem likely to go to seed. Weeds should not be allowed to show themselves in a garden, much more their progeny.

In making dwarf Chrysanthemum plants, as mentioned in Chapter X., if there seems a difficulty in getting

them to root run a sharp knife along the middle of the stem to be layered for about two inches, and set the cut open with a small splinter of wood. Tongueing with a *Chrysanthemum* does not do; but this plan of laying the stem open often makes it root.

As a too crowded growth interferes with beauty, subdue the rampant growth of large things by cutting them away, thinning them out, or removing some where they grow too close together. This refers to this and the following months.

SUMMARY.—Attend to flowers in vases. Where desired, clip trees to set form. Take off Rose suckers, and attend to Roses and other choice flowers. Mulch, give liquid manure. Make cuttings. Attend to climbers. Attend to general tidying. Weed regularly. Dwarf *Chrysanthemum* plants. Set crowded beds in order.

CHAPTER XXVI.

GARDEN OPERATIONS IN AUGUST.

INSECTS are of all months of the year, but they are especially destructive in warm weather. With the very first warmth Aphides, in shoals and nations, show their unwelcome presence on our roses, geraniums, and almost all choice plants. A drying east wind makes them abound, and rain clears them away. Lacking the genial rains to do this work, we must take it in hand ourselves, with careful hand-picking or washing them off, which can best be done by taking hold of each spray and washing off the green fly with a small soft painter's brush and clean water, or weak quassia water. The next best remedy is fumigating with tobacco smoke. Let the plants be dry when you use the fumigator, and, if it be practicable, cover the head of each with a paper bag before it is operated on. Every florist should own Brown's fumigator. Take care that the tobacco does not break into a flame; examine the plants the next morning, and repeat the dose if necessary. Plants in a frame or pit can easily be placed

near together and fumigated *en masse*. Afterwards syringe freely.

The Rose Tortrix, *Tortrix Bergmanniana*, is a destructive grub, the butterfly of which is as small as a house fly, and very dark. Hand-picking is the best remedy, and this must be done with the greatest care, for, on the least warning, the grub will drop with a fine thread and escape.

The bright and beautiful Rose Beetle is mischievous in both stages, and luckily it can easily be caught, being large, and not very active.

The Coccus, or scale insect, chiefly infests greenhouses and indoor plants. The females are inert, adhering to leaves or stems; and the males are winged, resembling gnats, but exceedingly minute. Clearing them off with a brush is most effectual, and fumigating with turpentine gets rid of them.

Similar in character, and amenable to the same treatment, are the Oleander Scale, *Aspidiolus nerii*, which attacks oleanders, acacias, palms, aloes, and such like; the Rose Scale, *A. rosæ*; the Cactus Scale, *A. echinocactus*; and the Sweet Bay Scale, *A. lauri*.

The caterpillars of many butterflies and moths are destructive in the flower garden, and when the perfect insects can be caught before they lay their eggs one death will save much killing. Whenever one is found resting quietly on a branch, stem or leaf, with the wings folded, it is most likely a female about to lay her eggs, and it had better be killed. If a butterfly or moth is found so placed, dead, she will have laid the eggs, which should be searched for and destroyed. As the season advances destroy chrysalises, if you can find them.

The grubs of many beetles are also destructive in flower gardens.

The Earwig, *Forficula auricularis*, is very mischievous among dahlias, pinks, carnations, and many other flowers and their seeds. Earwigs eat at night, and in the day hide away in dark recesses, so that they may be caught by giving them dark hiding places, in which they may be looked for and destroyed every morning. Small garden pots, crab and lobster claws, pointed bags

of thick dark paper, or any similar contrivance, turned upside down on sticks, will catch a great many.

Slugs, snails, centipedes and wood lice, are all very injurious.

After naming so many things which must be destroyed for the preservation of our flowers, a few words may be said on the more agreeable subject of those denizens of the garden, the lives of which should be spared, because, innocent themselves, they kill destroyers. First among these are frogs and toads; I ought to say toads and frogs, for the toads I believe are the more active in eating injurious creatures in the garden—slugs, snails, caterpillars, grubs, moths, and millipedes. By all means spare the lives of the toads and frogs, and let them be defended from injury. Catch one and put him wherever the destructive wood lice abound, and you will find out his merits.

Moles are valuable in eating noxious grubs, so they should be treated with mercy, although they must be banished from under the lawn. Hedgehogs do good in the garden, eating beetles, snails and slugs, and sometimes mice, which are very mischievous in eating any seeds that eat nice—bulbs, and some other roots. Young chickens must be kept safe from them. The shrew mouse is an insect eater, and not a root and seed eater, like the destructive field mouse. Bats also eat cockchafers (one of the most destructive among insects), moths, and such like winged things.

Snakes, slow worms, and lizards, are all industrious destroyers of slugs, and do no harm to counterbalance this great good. So by all means let them live.

The pretty little lady bird should be respected and cherished as the great enemy to, and devourer of, the aphides. I believe the perfect insects, as well as their *larvæ* eat these pests of the flower garden. The *larvæ* are flattish, fleshy grubs, tapering to the tail; they have no legs, but are very active.

Mole crickets disturb the earth a little, but they devour grubs. Glowworms eat snails, and their relative, *Drilus flavescens*, does the same. All beetles are not to be condemned, as some of them are enemies to the

flower garden's worst enemies—rose beetles, cockchafers, wireworms, slugs and snails (skipjacks are wireworms in another stage). These useful creatures are some of the ground beetles, the tiger beetle, rove beetles (popularly known as cocktails and devil's coach-horses), and two kinds of silpha. One of the weevil family, *Anthribus albinus*, feeds on the scale insect.

Bees of various kinds, so useful in spreading pollen, do no harm in the garden that I am aware of. The ichneumons and the sand wasp destroy caterpillars in great numbers. Even some caterpillars feed only on noxious weeds, but Mr. Wood says: "It may be assumed that every subterranean larva in a garden is obnoxious, and may safely be destroyed." The grubs of the lace wing fly, and the hawk fly, feed entirely on spiders. Spiders also may be spared.

These few remarks on insects, and other garden "friends and foes," extend over all the months between the first gleams of warmth and the time when insect depredations are curbed by winter frosts.

August work in the garden embraces minute attention to order in all departments—pruning, tying, restraining, taking cuttings as good ones present themselves, weeding beds, lawns and paths, and watering with judgment when it is necessary.

SUMMARY.—Keep everything in perfect order.

CHAPTER XXVII.

GARDEN OPERATIONS IN SEPTEMBER.

To retain the flower beds in continued beauty it is most important to cut all withered flowers, and to cut in stems of too rampant a growth whenever it can be done without giving a check. Also be careful to gather seed pods before they swell, wherever neglect in gathering dead flowers has allowed them to form. Constant little attention of this kind to the flower bed will keep them gay until quite late in the year.

The plants which are intended to produce seed should

not be allowed to go on until the best bloom is past; but the finest flower on the finest plant should be marked while in its full prime, at whatever season that may occur. The plant should then have plenty of room given it, a mulching of manure if it be considered advisable, and all the flowers not wanted for seed should be plucked to give full strength to the few. A dry day should be carefully chosen for gathering seed. As soon as the seed is taken some *Clarkias*, *Nemophilas*, *Collinsias* and *Candytufts* may be sown now, and the plants kept through the winter, as their seed never produces such fine plants as when it is sown as soon as it is ripe. Also sow *Godetias*, *Lupinus Nanus*, *Gilia tricolor*, *Lep-tosiphon androsaceus* and *Densiflora*, and *Viscaria oculata*. Seed of *Ranunculuses* and the *Cruciferæ* will keep four years. *Capsicum* seed will keep good for several years if kept in the pod, but will seldom grow the second year if taken from it. *Mignonette* seed will do several years old; wallflower may be two years old; sweet peas and lupines should be used at one year old. *Larkspur* will not do well after the second year. *Princes feather* and *poppies* will keep several years. As a rule, however, it is better not to depend on old seed.

As the old hot-beds of the year are done with, and done away with, put up good reserve heaps of composts of different kinds, fit for all choice plants, for potting, and for making cuttings, taking care to mix them well, to turn them over to mellow, to pick out grubs and wire-worms, and to shelter them from wet. Much of the success of next year's flowers will depend on having good stores of composts of various kinds, to go to for their use. Do not forget a store of good turfy loam. The making of cuttings for good stores of plants must be actively carried on. Commence with white, scarlet, and purple *verbenas*, taking nice stubby side shoots. Lots of such cuttings may be taken without materially interfering with the flowering plants. Fill three-inch pots quite full of the cuttings, place them on ashes or sand with a frame over them, and they can be shifted into larger pots in January or February;

top them for cuttings, if more are wanted then. After these may follow the heliotropes, and plants of that kind, later scarlet geraniums, and, in October, calceolarias.

This month and the following, beds will have to be made for different choice flowers which are planted in autumn, and many bulbs may be put in. At the end of the month frost must be watched for with care. The dahlias had better be earthed up over their crowns, that they may not be caught and spoiled by sudden frost.

The choicer geraniums had better be taken up and potted at the first threatening of frost, and put in a dry place, where they will be safe from frost. If they can be placed on gentle bottom heat in a pit, they will soon be established, and can then be stored away in winter quarters. Where it is necessary to take up showy, tender plants rather early, their place can be supplied with chrysanthemums coming forward, and any spare winter blooming plants there may be in reserve.

Anne Boleyn pinks, cloves, and carnations, will flower nicely in autumn and winter under glass, almost, if not quite, without heat, if they are prevented blooming in summer by nipping off the flower stems as they appear.

Purchases of bulbs should be made in good time to prevent disappointment from indifferent supply from a well picked over stock, of which we have no right to complain, if it arises from our own remissness in sending our orders.

Transplant evergreens this month, that the trees or shrubs may make fresh roots before the check of winter. If moved in September they will be much less likely to suffer in the spring than if the work is delayed. Deciduous trees and shrubs must, of course, not be removed until they have lost their leaves. Many plants should be shifted now, that they may make root before winter. All the autumn flowering plants will require constant attention in putting stakes, sticks, and ties, as not a flower now must be lost for want of care.

SUMMARY.—Cut off dead flowers, and attend to the

neatness of the beds and borders. Gather ripe seeds, and sow some kinds. Make collections of composts for choice plants. Plant cuttings; make beds for bulbs and choice flowers. Earth over the crowns of dahlias. Watch for early frost to save tender plants. Pinks and carnations to flower late and in winter. Purchase bulbs. Transplant evergreens. Re-pot.

CHAPTER XXVIII.

GARDEN OPERATIONS IN OCTOBER.

TRY by some means or other to get a nice stack of fibry turf to mingle and mellow for future use, and pack over it a thatch of good square cut turf, it will prove a store worth anything at from one year old onwards. Cow manure, too, should be laid up in store, to come into use when two years old. These are only two of many items to be needed for making valuable composts.

When October begins, frost in real earnest must be expected at any time and prepared for. After the foliage of the dahlias is cut down, they may remain a short time still in the ground, and then the roots must be taken up. Preparation must be made for protecting tender plants and climbers, as it may become necessary to defend them any night, with very short notice. Preparation of protective materials may employ bad days; look over and arrange mats of all kinds, and make any covers of reed, straw, &c., that may be useful. Hardy creepers may be made snug by neat, close training, and have rampant straggling sprays removed. Do the pruning of tender sorts at twice or thrice. Taking up and potting all choice plants which frost would hurt, must be systematically proceeded with. The newly potted geraniums and other plants should, if possible, be placed on mild bottom heat, to start the roots before being put by in winter quarters. If chrysanthemums, and some other plants in flower, are protected from the first frosts, they may yet go on and

bloom, and look gay for a long time. Cut down hollyhocks, and daub tar on the cut stems to keep out wet.

Take up all the old scarlet geraniums there can possibly be found winter room for, because old plants will flower earlier and more abundantly than the plants from cuttings. If they are taken up early, and potted in pots just large enough to hold the roots, cuttings may afterwards be taken from them.

Set in order all the flower beds and borders. Cut down abundantly, and pull up all dead and dying annuals, thin the shrubberies and screens, and clear away dead and untidy looking matter of all kinds. Carefully collect all this mass of foliage, chopping up with a bill-hook such tough stuff as hollyhock stems, and collecting dead leaves, as many as can be got together, daily. This, even in a garden of medium size, will soon be a large quantity. Throw it all in a heap, pack it together, and turn it about, so that it will heat; for slight hot-beds, with inexpensive frames over them, will cost very little, and the more you can have the better will be your show of fine flowers next year, for all the year round, with only a little management and forethought.

All herbaceous plants that have grown too large, and straggling in growth, should be taken up, have the roots divided, and be planted about, where they will produce the best effect. Double rockets, purple and white, should be so lifted, and put in a new spot once a year. On no account put off transplanting evergreens; common rhododendrons will move well.

When the beds are cleared make provision for gaiety in spring by planting narcissus, hyacinths, turban ranunculus and tulips. Beds of these edged with crocuses of different colours look very nice. Abundance of spring flowers, too, may be planted—primroses, polyanthus roots, alyssum, candytuft, arabis, and aubrietia, will be done with in time to make room for bedding plants next year. Plant also early tulips, hardy cyclamens, hepaticæ, red, white, and blue, snow-drops, winter aconites, and dog's-tooth violets. Do not

forget to make the borders gay with plenty of free blooming common roots, such as wallflowers, Canterbury bells, sweet Williams, foxgloves, fine Veronicas, and all kinds of showy, handsome perennials.

As many simply-made hot-beds as there can be found room, material, and frames for, will be quite sure to get filled with advantage. Make the bottom of the beds below the level of the ground, and, to drain it, lay in nine inches thickness of dry litter, such as the straw with the manure shaken out. Over this spread a little older litter, and tread it down well; then a few inches thickness of half-decayed leaf-mould, and collected stuff of that kind, with a little earth, and a wheelbarrowful of lime, all well mixed together, to get rid of worms, &c., this also trodden down well. Over all place a sufficient thickness of light earth, if it is for cuttings, and if for keeping potted plants tan, cinder, ashes, or any medium in which to plunge them, or a thin layer for them to stand upon. A bed can be made out of sight whenever the requisite material presents itself.

SUMMARY.—Lay up material for composts. Prepare for winter by protecting, taking up, potting, and pruning in climbers. Set the flower beds in order, collect material for hot-beds, divide roots, move evergreens (if not done), and plant the garden with a view to gay flowers in the spring. Make hot-beds when the necessary material is ready.

CHAPTER XXIX.

GARDEN OPERATIONS IN NOVEMBER AND DECEMBER.

LITTLE remains to be done before the end of the year but to look to the last month's work and see that nothing is left undone; no choice plant intended to stay out the winter left without the protection necessary to keep off winter frost and wet; and no cherished flower, which

should be lifted, forgotten and left to perish in the beds.

Take up the roots of tigridias, dry them, and put them away where they will be safe from mice. Except in very favourable localities serve Gladioli the same. *Salvia patens*, French and African marigolds, fuchsias, and such like, may be kept alive by coverings of finely sifted coal-ashes. To bedding plants, cuttings, and most plants in pots, future prosperity mainly depends on the invigorating supply of air they can get, as long as any spirit of growth remains in them; so give air freely to all, as long as the absence of biting frost renders it practicable. Sometimes we get little such before Christmas. Water must be given sparingly, only the plants must not be allowed positively to suffer for the want of it, and take great care not to spill, as the damp arising from water on the floors and stages is injurious at this season. Give water enough to wet the soil (taking care that the drainage is good), and then do not give any again until it is wanted.

All alterations should be finished in November.

When the last month in the year dawns upon us more careful protection may be wanted, or very severe weather may keep off a month longer. Whenever it comes it must be met as if expected. All tender roots may be protected with coverings of half-decayed leaves, and hardy annuals dusted over with soot, quick-lime, and wood-ashes to destroy slugs. Trench vacant ground, and leave it rough, to mellow in the frost.

SUMMARY.—See that the work is all well finished up. Take up roots of tigridias, &c. Protect, where necessary, but give plants in pots as much air as can be. Water with care and caution. When *very* sharp weather comes, give more protection. Attend to slugs. Rough dig spare ground.

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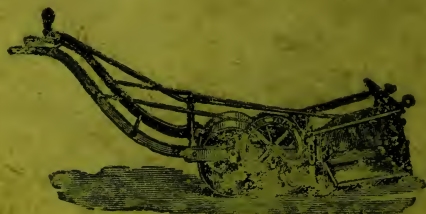
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